USACERL SR 96/60
July 1996
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Environmental Compliance Audit Handbook (ECAH)

U.S. Fish and Wildlife Service (FWS)

Revised September 1999

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This handbook is continually updated to address new environmental compliance laws and regulations.

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The numbers of environmental laws and regulations have continued to grow in the United States, making compliance with these regulations increasingly difficult. Environmental assessments became a way to determine operational consistency and compliance with current environmental regulations. The U.S. Fish and Wildlife Service (FWS) has adopted an environmental compliance program that identifies compliance problems before they are cited as violations by the U.S. Environmental Protection Agency (USEPA).

Beginning in 1993, the U.S. Army Construction Engineering Research Laboratory, in cooperation with FWS, began research on this handbook. The concept was to combine the Code of Federal Regulations with good management practices and risk-management issues into a series of checklists that show legal requirements and specific items of operations to review.

This handbook is continually updated to address new environmental compliance laws and regulations.

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FOREWORD

This is USACERL Special Report 96/60. **The report is based on information available in the Federal Register as of 23 June 1999.** This research was performed for the Fish and Wildlife Service (FWS), Environmental and Facility Compliance (EFC), under MIPR number IA144800109507, Task Order 95-004, *Fish and Wildlife Service Compliance Manual*, dated 04 May 1995. The FWS technical monitor was Charlie Fasano, FWS-EFC.

The research was performed by the Environmental Processes Branch (CN-E) of the U.S. Army Construction Engineering Research Laboratory (USACERL). The Principal Investigator was Tina M. Hurt (CN-E). Jerry Benson is Branch Chief, CN-E and John Bandy is Division Chief, CN.

Dr. Michael J. O'Connor is Director, USACERL.

NOTICE

This handbook is intended as general guidance for personnel at FWS facilities. It is not, nor is it intended to be, a complete treatise on environmental laws and regulations. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information contained herein. For any specific questions about, or interpretations of, the legal references herein, consult appropriate counsel.

Summary of Changes Since September 1998	
Checklist item/Section	**Action Taken**
Air Emissions Management	
AE.1.8	Revised July 1999
Appendix 1-1d	Added July 1999
Drinking Water Management	
Main Introduction	D. Key Compliance Requirements • Filtration and Disinfection paragraph revised January 1999 E. Key Compliance Definitions • Added definitions related to revision of drinking water regulations January 1999.
DW.20.1 and DW.20.2	Revised January 1999
DW.20.9 through DW.20.11	Added January 1999
DW.30.2	Revised January 1999
DW.30.4 and DW.30.5	Added January 1999
DW.35.3	Added January 1999
DW.40.7	Revised April 1999
DW.40.12	Revised January 1999
DW.40.15 through DW.40.17	Added January 1999
DW.45.2	Added October 1998
DW.65.3 through DW.65.5	Added January 1999
DW.76.2	Added January 1999
DW.77.7	Revised April 1999
DW.77.9	Added January 1999
DW.80.2	Added January 1999
Appendix 2-1	Revised January 1999
Appendix 2-6a	Added January 1999
Appendix 2-9 through 2-11	Added January 1999
Hazardous Materials Management	
Main Introduction	B. Federal Regulations • EO 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition* Added October 1998. E. Key Compliance Definitions • Revised and added definitions related to EPCRA April 1999 • Added definitions associated with regulations on

Summary of Changes Since September 1998	
Checklist item/Section	**Action Taken**
	procurement of recycle content products July 1999 and explosives August 1999.
HM.12.1	Revised October 1998
HM.12.3 and HM.12.4	Added July 1999
HM.20.2 , HM.20.4, HM.20.5	Revised April 1999
HM.25.1	Revised April 1999
HM.30.1 through HM.30.3	Revised April 1999
HM.35.1	Revised August 1999
HM.35.9	Revised August 1999
HM.35.10	Added July 1999
HM.55.2 through HM.55.11	Added August 1999
Appendix 3-7	Added August 1999
Hazardous Waste Management	
Main Introduction	E. Key Compliance Definitions • Revised definition of Small Quantity Handlers of Universal Waste January 1999 • Revised definition of *Exempted Hazardous Waste Management Unit* April 1999 • Added definitions of *Equipment* April 1999 • Revised definitions of *Hazardous Debris* and added definition of *Soil* July 1999 F. Records to Review/Physical Features to Inspect Revised January 1999
HW.10.1	Revised April 1999
HW.10.7	Added July 1999
HW.100.2	Revised August 1999
HW.122.1	Revised January 1999
HW.122.3	Deleted January 1999
Appendix 4-1, Table 2	Revised January 1999
Pesticides Management	
Main Introduction	D. Key Compliance Requirements • Pesticide Disposal paragraph Deleted October 1998 E. Key Compliance Definitions • *Imminent Hazard* and *Pesticide* definitions Deleted October 1998. • Added definition of *Pesticide Labeling* January 1999.
PM.1.8	Added January 1999
PM.47.9	Added July 1999

Summary of Changes Since September 1998	
Checklist item/Section	**Action Taken**
POL Management	
Main Introduction	D. Key Compliance Requirements • AST paragraph Revised January 1999 • Mobile/Portable Tank paragraph Added April 1999. • Discharge Prevention/Cleanup paragraph Revised January 1999
PO.1.5	Added July 1999
PO.20.1	Revised January 1999
PO.40.1	Revised January 1999
PO.40.5	Added April 1999
PO.45.4	Revised July 1999
PO.55.1	Revised January 1999
Solid Waste Management	
SW.25.3	Added July 1999
Special Pollutants	
Main Introduction	D. Key Compliance Requirements Revised October 1998 E. Key Compliance Definitions • Added and revised definitions related to PCBs October 1998.
SP.5. (NOTE: .....)	Added October 1998
SP.5.3 and SP.5.4	Revised October 1998
SP.5.5	Added October 1998
SP.10 (NOTE: ....)	Added October 1998
SP.10.1	Revised October 1998
SP.15. (NOTE: ....)	Added October 1998
SP.15.3 and SP.15.4	Revised October 1998
SP.15.6	Revised October 1998
SP.15.8	Revised October 1998
SP.15.11	Added October 1998
SP.20. (NOTE: ....)	Added October 1998
SP.20.1	Revised October 1998
SP.25. (NOTE: ....)	Added October 1998
SP.25.1 and SP.25.2	Revised October 1998
SP.30. (NOTE: ....)	Added October 1998
SP.30.1	Revised October 1998
SP.35. (NOTE: ....)	Added October 1998
SP.35.1 and SP.35.2	Revised October 1998
SP.35.4 and SP.35.5	Revised October 1998
SP.35.7 through SP.35.9	Added October 1998
SP.40. (NOTE: ....)	Added October 1998
SP.40.1 and SP.40.2	Revised October 1998
SP.45.1	Revised October 1998

Summary of Changes Since September 1998	
Checklist item/Section	**Action Taken**
SP.45.2	Deleted October 1998
SP.45.3	Revised October 1998
SP.45.4 and SP.45.5	Deleted October 1998
SP.45.7 through SP.45.10	Revised October 1998
SP.45.12 through SP.45.15	Added October 1998
SP.60.1	Revised October 1998
Appendix 8-3	Added October 1998
Underground Storage Tank (UST) Management	
Main Introduction	D. Key Compliance Requirements • AST paragraph Revised January 1999 • Mobile/Portable Tanks paragraph Added April 1999
UT.40.1	Revised January 1999
UT.65.1	Revised January 1999
Appendix 9-2	Deleted January 1999
Wastewater Management	
No Changes	

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ENVIRONMENTAL COMPLIANCE AUDIT PROGRAM (ECAP)

The FWS Environmental Compliance Audit Program (ECAP) U.S. Environmental Compliance Audit Handbook (ECAH) was developed by USACERL to simplify the environmental evaluation process for the Fish and Wildlife Service (FWS). The objectives of the ECAP program are to:

1. Establish FWS-wide standards for environmental compliance audits as a means of ensuring the Service's observance of all applicable environmental laws and regulations. 560 FW 1 further details the FWS policy of complying with applicable pollution control standards at its facilities.
2. Through the auditing process (560 FW 4) and the use of ECAH, assure Regional Directors and environmental program managers that environmental programs are effectively addressing environmental problems that could:
   a. impact FWS mission effectiveness
   b. jeopardize the health of Service personnel or the general public
   c. significantly degrade the environment
   d. expose the FWS to avoidable financial liabilities as a result of noncompliance with environmental requirements
   e. erode public confidence in the FWS and the U.S. Department of the Interior (DOI)
   f. expose individuals to civil and criminal liability
3. Secure information through auditing processes addressed in the handbook, that will permit FWS Managers to address existing environmental problems and to anticipate and prevent future environmental problems
4. Provide data, through the auditing process, for use in identifying, validating, prioritizing, programming, and budgeting environmental requirements.

Any change to or suggestion for improving this guidance handbook should be forwarded to Billy Umsted at the FWS, Environmental and Facility Compliance (EFC), 12795 W. Alameda Parkway, Lakewood, CO 80228.

The information in this handbook applies to all FWS facilities in the United States and its territories. **The contents of this handbook are up-to-date as of 30 June 1999.**

TYPES OF ENVIRONMENTAL AUDITS

The Service's auditing program is covered in 560 FW 7, dated 31 December 1996. Audits will be of three types:

1. **Formal Audits** - Formal audits require a site visit to the facility to be evaluated. Onsite, the auditors will conduct record searches, interviews, and a site survey to determine the compliance status of the facility. These audits would be scheduled by the Region and performed by a team of 2 - 3 individuals consisting of EFC or Regional Office personnel or a combination of both. The formal audit process can be divided into three phases:
   a. The Previsit Environmental Compliance Questionnaire (ECQ) (see Appendix A), is sent to the Facility Managers by the Regional Compliance Coordinator (RCC), approximately 60 days prior to the audit.
   b. Site audit done using ECAH and the appropriate state supplement.
   c. Written report to document all findings.

2. **Informal Audit** - The informal audit will be performed by the Facility Manager through the use of the informal audit questionnaire (see Appendix B), ECAH, the appropriate state supplement, and with the support of other Regional personnel as necessary. The facility personnel will physically walk through their facility and address each applicable item in the questionnaire. This is a detailed visual inspection of each building and associated facilities. All findings will be documented and submitted to the RCC. The RCC will determine if a report or memorandum is necessary to document the informal audit.

3. **Self Audit** - It is recommended that each Facility Manager, through the use of the Self Audit Questionnaire, annually inspect their facility to determine compliance with environmental laws and regulations. The questionnaire can be obtained from the RCC. The purpose of a self audit is to provide a quick evaluation of environmental issues during the period between formal and informal audits. Self audits are not recommended to be conducted during the same year when formal or informal audits are held.

ENVIRONMENTAL COMPLIANCE AUDIT PROCESS

The environmental audit process can be divided into three distinct phases:

1. pre-audit activities
2. site audit activities
3. post-audit activities.

This handbook incorporates the first two phases of the program management process.

Pre-Audit Activities - Six key activities should be completed before an audit team begins the audit activities.

1. Environmental Compliance Questionnaire (ECQ). The purpose of the ECQ is to collect information that will familiarize the audit team with the facility and its operations so that they are able to review the applicable regulations and prepare a detailed audit schedule. The ECQ is an essential part of pre-audit activities and is also an excellent tool for ensuring that internal audit team members are starting from the same base of information. Appendix A contains a sample ECQ. Once the activities that occur at a facility are known, Appendix C (see page 59), a logic table, can be used to identify potentially applicable handbook sections. Appendix C indicates the major environmental operations and activities at a typical FWS facility and the handbook sections within which they are addressed. As shown, many activities and operations cause environmental impacts in more than one area, and are therefore addressed in more than one section.

2. Define Audit Scope and Team Responsibilities. The facility or FWS may wish to place special emphasis on certain sections or to review additional areas not covered in the handbook. These goals must be stated clearly so the audit can be planned properly. Additionally, the duration of the audit, appointment of team members, and handling of tenants and off-facility sites must be addressed. Finally, responsibilities for each of the sections must be assigned to team members as appropriate.

3. Develop Audit Schedule. The team should develop a detailed schedule that includes the activities planned for each day.

4. Review Relevant Regulations. Once the audit scope and responsibilities are known, the auditors should undertake a thorough review of relevant Federal, state, and local regulations affecting the facility. The applicable environmental regulations must be determined before the audit begins. If not already available, checklist items for state and local requirements must be added to the checklists in the audit handbook.

5. Review Audit Sections. Each auditor should know the regulatory requirements, schedule, and be familiar with the audit checklists that will be used.

6. Availability of Records. In addition to completing the ECQ, the Facility Manager should assemble all pollution control records listed in Appendix A prior to the arrival of the team. A list of possible records is at the end of the ECQ. Appendix D (see page 63) provides some useful information as to how environmental records should be organized.

Site Audit Activities - Onsite, the auditors will conduct an inbrief (Appendix E, see page 67) for a sample inbrief handout), record searches, interviews, and site surveys to identify potential problems or deficiencies at the facility. Operations are compared with environmental standards and any deficiencies are written up as findings. The data collected should be sufficient, reliable, and relevant to provide a sound basis for audit findings and recommendations. A Finding Summary form

is available to assist auditors in compiling needed information during an audit. A Finding Summary form should be completed for each finding during the audit. These forms comprise the basis of the audit report. The format and content for audit reports will be in a separate supplement. Appendix F (see page 69) shows a completed sample Finding Summary form.

The CONDITION is a factual statement describing the status of the process, permit, or situation under investigation, and the CRITERIA is the environmental standard (Federal, state, local, Required Practice, Management Practice) the facility is being measured against. A condition may be positive if the facility is going above and beyond the requirements. SUGGESTED SOLUTIONS is an optional entry, and may include easily identifiable solutions to the deficiency. COMMENTS may include any corrective actions already taken or scheduled, or any other appropriate information pertaining to the finding. Once completed, a finding has to be ranked for the severity of noncompliance. The ranking options are explained on the back of the Finding Summary.

For example, a team member assigned to evaluate the facilities' hazardous waste management program, which is a small quantity generator (SQG), visited the facility's hazardous waste storage area. The auditor noticed some drums were damaged and took a count of the total number of drums and the number of damaged drums to get an accurate description for the finding. Five of the eight drums were rusted and bulging. Checklist item HW.30.2 in the FWS handbook states that 40 CFR 262.34(d)(2) and 265.171 requires containers to not be leaking, bulging, rusting, or badly dented. The damaged drums were behind the others, so the site manager may have overlooked them during the regular inspections. The site manager immediately put overpack drums on order. The auditor is now ready to fill out a Finding Summary (see Appendix F).

A finding may be positive or negative. A positive finding is for a job, activity, or person who has gone above and beyond the regulatory and required practices (RP) requirements for protecting the environment. A negative finding is when there is an issue of noncompliance or a poor management practice (MP).

Each finding is then assigned a maximum of two universal codes and a maximum of two section codes from the list in Appendix F. These codes enable the EFC to better identify the root causes of noncompliance.

A copy of the Finding Summary forms is to be left at the facility by the audit team. See Appendix G for a sample tally sheet which can be used in the facility outbrief.

Post-Audit Activities - For the FWS, 560 FW 7.3(c) details the requirements for post-audit activities. The audit team is required to produce a Draft Findings Report within 30 days after the completion of the audit in accordance with the following format:

1. Section One. This contains an executive summary identifying where the audit was done, what was audited, and a list of the members of the audit team. It also provides background information on the site.
2. Section Two. Program Objectives.
3. Section Three. This section contains the details on the regulatory and RP compliance status of the audited facility. An explanation of the finding ratings is provided along with a compliance summary table indicating the number of findings in each category. This section must contain all environmental and safety-related regulatory findings associated with each audit.
4. Section Four. This section contains the MP findings that were identified during the audit. These findings are rated either positive or negative and are recorded in a summary table. This section must contain all environmental and safety-related MP findings associated with each audit.

5. Section Five. This section contains the required practice (RP) findings that are associated with DOI and FWS policies. These findings are rated as either positive or negative and are recorded in a summary table. This section must contain all environmental and safety-related RP findings associated with each audit.

The Draft Findings Report is distributed to the facility by the audit team leader and a copy is maintained by the EFC. Upon receipt of the report, the facility has 60 days to develop a corrective action to each of the regulatory, MP, and RP findings. A reply can be as simple as "situation corrected on 30 June 1994," "work order request submitted on 30 May 1994 for construction of cement pad," or "plan is scheduled to undergo review and updating in August of 1994." Regulatory compliance and RP findings must be corrected. MP findings are recommended to be corrected. If the facility has received a significant finding, this finding will be forwarded to the Directorate level.

Upon receipt of corrective action replies, the audit team leader will issue a final report within 30 days. If a reply/corrective action is not appropriate to the finding, the audit team leader will contact the facility and resolve the issue. The team leader will send one copy of the final report to the Region, the facility, and the EFC.

The Regional Compliance Coordinator will participate in the tracking of progress on corrective actions. The facility will submit a report to the Region 12 mo after the finalization of the report detailing the status of the corrective actions. Reporting will continue every 12 mo until corrective actions are completed and all updates will be forwarded to the EFC.

The EFC will maintain a national database of audits and their subsequent findings for all Service facilities.

HANDBOOK OBJECTIVES AND ORGANIZATION

If not controlled or properly managed, FWS facilities engaged in many operations and activities can cause environmental impacts on public health and the environment. Many of these activities and operations are regulated by Federal, state, and local regulations, and by FWS regulations/policies.

The contents of this handbook are based on Federal environmental regulations and are to be supplemented locally using state and local environmental regulations that are applicable to FWS facilities and are more stringent than Federal regulations included in this handbook. The handbook is updated annually. This handbook, with state and local supplements, is intended to serve as the primary tool in conducting an environmental compliance audit. Specifically, this handbook:

1. Complies with applicable Federal regulations and FWS and DOI environmental directives applicable to FWS operations and activities
2. Synthesizes environmental regulations, management practices (MPs), required practices (RP), and risk management issues into consistent and easy to use checklists
3. Serves as an aid in the compliance process and management action development phases of the ECAP.

After a review of these activities at FWS facilities, it is apparent that there are major categories of environmental compliance into which most environmental regulations and FWS activities could be grouped. This handbook is divided into 10 sections that correspond to major compliance categories.

1. Air Emissions Management
2. Drinking Water Quality
3. Hazardous Materials Management
4. Hazardous Waste Management
5. Pesticide Management
6. Petroleum, Oil, and Lubricant (POL) Management
7. Solid Waste Management
8. Special Pollutants Management (includes asbestos, PCBs, radon, and noise)
9. Underground Storage Tank (UST) Management
10. Wastewater Management.

Each section is organized in the following format:

A. Applicability. This provides guidance on the major activities and operations included in the section and a brief description of the major application.

B. Federal Legislation. This identifies, in summary form, the key legislative issues associated with the compliance area in the Federal law.

C. State/Local Regulations. This identifies the typical compliance areas normally addressed in state and local regulations. This section does not present individual state/local requirements. An audit of state and local requirements must be conducted and supplemental questions prepared to cover these requirements. The handbook is prepared in loose leaf form to allow state and local requirements to be easily inserted. Checklist item 3 in each section lists issues that are typically regulated by the states.

D. FWS/DOI Manuals. This identifies the FWS and DOI manuals which have been finalized as of the publication of this handbook.

E. **Key Compliance Requirements.** This summarizes the significant compliance requirements associated with the regulations included in the checklist. It is a brief abstract summarizing the overall thrust of the regulations for that particular compliance category.

F. **Key Compliance Definitions.** This presents definitions taken from the Code of Federal Regulations (CFRs) for those key terms associated with each compliance category.

G. **Compliance Audit Checklists.** The final portion of each section contains checklists and tables and figures composed of requirements or guidelines that serve as indicators to point out possible compliance problems, as well as practices, conditions, and situations that could indicate potential problems. They are intended to focus attention on the key compliance questions and issues that should be investigated. Instructions are provided to direct the auditor to the appropriate action, references, or activity that corresponds to the specific requirement or guide.

USING THE CHECKLISTS

Understanding the layout and structure of the checklists facilitates their use during the audit.

- **Explanation of Layout/Content.** The checklist portion of each protocol section is divided into two columns. The first of these is a statement of a requirement. This may be a strict regulatory requirement, in which case the citation is given, or it may be a requirement that is considered to be a management practice to maintain compliance, but which is not specifically mandated by regulation. The second column gives instructions to help conduct the compliance audit. These instructions are intended to be specific action items that should be accomplished by the investigator. Some of the instructions may be a simple documentation check taking a few minutes; others may require physical inspection of a facility. In an effort to simplify using the checklists, measurements which were not converted into an English equivalent in the regulations have been converted by USACERL. These conversions done by USACERL appear in [ ]'s while conversions provided in the regulations appear in ( )'s.

  The audit procedures are designed as an aid and should not be considered exhaustive. Use of the checklist requires the auditor's judgment to play a role in determining the focus and extent of further investigation. A review of appropriate state regulations should be conducted so additional review questions that reflect the substantive requirements of state/local regulations pertinent to individual facilities can be included in the checklists.

- **Checklist Item Numbering.** The checklist items are each assigned a three part number. The first part of the number indicates the section the checklist item is in (i.e., SW for Solid Waste Management, HW for Hazardous Waste Management). The second part of the number indicates the topic within the section. This second part increases by increments of five to provide for room to add new topics to the checklist. The third number indicates the placement of the checklist item within the topic. These checklist item numbers will be kept static from this year to next year. New checklist items will be added at the end of topics or inserted as entirely new topics.

- **Standard Checklist Items.** The first four checklist items in each section of the handbook are standardized. The first item requires a review of any previous audit documents. The second item requires a review of state and local regulations as well as indicating issues commonly regulated at the state and local level. The third item provides a place for auditors to write up findings that are based on regulations that have been promulgated since the publication of the handbook or regulations not included in the handbook. The fourth item suggests that copies of notices of violation (NOVs) be forwarded to the Region and the EFC.

COMMON FINDINGS OF NONCOMPLIANCE AT FWS FACILITIES

Some of the most common compliance problems at FWS hatcheries and refuges are listed below. Associated checklist item numbers are listed in parenthesis.

A. HATCHERIES

Air Quality

- Repairing chlorofluorocarbon (CFC)-containing apparatus' without recycling/ reclaiming. (A.90.1, A.90.3 through A.90.6, and A.90.10)
- Old refrigerators sitting in the boneyard, increasing the possibility of venting CFCs. (A.90.4 or A.90.11)
- Missing signs from fuel dispensing pumps. (A.55.2 and A.55.3)

Drinking Water Management

- Incomplete or no records of testing of drinking water. (Depends on the classification of the system)
- Drinking water systems not testing according to FWS required standards. (DW.1.6 and DW.1.7)

Hazardous Materials Management

- No written Hazard Communication Program. (HM.10.1)
- Incomplete file of Material Safety Data Sheets (MSDSs). (HM.1.9)
- No list of hazardous materials or copies of MSDSs submitted to the local emergency response committee or local fire department. (HM.1.7, HM.25.1, HM.30.1)
- Unlabeled drums and containers. (HM.1.10)
- Lack of correct signs on storage areas. (Depends on type of storage)
- Storage of flammable/combustible materials in cabinets or storage buildings that do not meet regulatory criteria. (HM.35.4, HM.35.6, and HM.35.7)
- Compressed gas cylinders stored without being chained or restrained in another manner. (HM.45.1)

Hazardous Waste Management

- Unusable hazardous materials stored with usable hazardous materials when they need to be disposed of as hazardous waste. (HW.10.1)
- Containers of unknown substances stored at facilities. (HW.10.1)
- No records of the disposal of potentially hazardous waste in a nonhazardous manner (i.e., recycling batteries). (HW.10.2)
- Not following the requirements for a conditionally exempt small quantity generator (CESQG) as mandated by the FWS and Federal regulations. (Category HW.15)

Pesticide Management

- Equipment used for the application of pesticides not clearly identified as such. (PM.48.7)

Petroleum, Oil, and Lubricant (POL) Management

- No Spill Prevention Control and Countermeasure (SPCC) plan. (PO.5.1)
- No spill equipment or containment to prevent petroleum product spills from entering waterways. (PO.15.1)
- No secondary containment for aboveground storage tanks (ASTs) of greater than 660 gal. (PO.40.1)

Solid Waste Management

- Trash piled up in an unauthorized dump site. (SW.10.1 and SW.35.1)
- No recycling program. (SW.25.1)
- Abandoned landfill sites. (SW.1.2 and SW.40.1)

Special Pollutants Management

- Personnel repairing water pipes that are asbestos-containing without accredited training. (SP.65.1 and SP.65.2)
- Lack of labels on remaining asbestos. (SP.55.2 and SP.55.3)
- The facility is unaware as to whether or not transformers at the site are polychlorinated biphenyl (PCB)-contaminated. (SP.15.1)

Underground Storage Tank (UST) Management

- No records of release detection monitoring. (UT.40.1)
- No drawings, schematics, or information as to the type of UST at the facility. (UT.70.1 and UT.70.2)
- USTs abandoned without correct closure or no documentation of state approved closure. (UT.1.2 and category UT.75)

Wastewater Management

- No National or State Pollution Discharge Elimination System (NPDES/SPDES) Permit for discharge of wastewater. (WW.10.1)

B. REFUGES

Air Quality

- Repairing chlorofluorocarbon (CFC)-containing apparatus' without recycling/ reclaiming. (A.90.1, A.90.3 through A.90.6, and A.90.10)
- Old refrigerators sitting in the boneyard, increasing the possibility of venting CFCs. (A.90.4 or A.90.11)
- Missing signs from fuel dispensing pumps. (A.55.2 and A.55.3)
- Operation of small incinerators without state approval. (A.1.2)

Drinking Water Management

- Incomplete or no records of testing of drinking water. (depends on classification of system)
- Drinking water systems not testing according to FWS required standards. (DW.1.6 and DW.1.7)
- Old wells not capped or closed. (DW.1.2)

Hazardous Materials Management

- No written Hazard Communication Program. (HM.10.1)
- Incomplete file of Material Safety Data Sheets (MSDSs). (HM.1.9)
- No list of hazardous materials or copies of MSDSs submitted to the local emergency response committee or local fire department. (HM.1.7, HM.25.1, and HM.30.1)
- Unlabeled drums and containers. (HM.1.10)
- Lack of correct signs on storage areas.(Depends on type of storage)
- Storage of flammable/combustible materials in cabinets or storage buildings that do not meet regulatory criteria. (HM.35.4, HM.35.6, and HM.35.7)
- Compressed gas cylinders stored without being chained or restrained in another manner. (HM.45.1)

Hazardous Waste Management

- Unusable hazardous materials stored with usable hazardous materials when they need to be disposed of as hazardous waste. (HW.10.1)
- Containers of unknown substances stored at facilities. (HW.10.1)
- No records of the disposal of potentially hazardous waste in a nonhazardous manner (i.e., recycling batteries). (HW.10.2)
- Not following the requirements for a conditionally exempt small quantity generator (CESQG) as mandated by the FWS and Federal regulations. (Category HW.15)

Pesticide Management

- Equipment used for the application of pesticides is not clearly marked as such. (PM.48.7)
- No records are kept of the applications of pesticides. (PM.45.1 and PM.45.2)

Petroleum, Oil, and Lubricant Management

- No SPCC plan. (PO.5.1)
- No spill equipment or containment to prevent petroleum product spills from entering waterways. (PO.15.1)
- No secondary containment for aboveground storage tanks (ASTs) of greater than 660 gal. (PO.40.1)
- Unlabeled or mislabeled containers of used oil. (PO.65.3)

Solid Waste Management

- Trash piled up in an unauthorized dump site. (SW.10.1 and SW.35.1)
- No recycling program. (SW.25.1)
- Abandoned landfill sites. (SW.1.2 and SW.40.1)

Special Pollutants Management

- Lack of labels on remaining asbestos. (SP.55.2 and SP.55.3)
- The facility is unaware as to whether or not transformers at the site are polychlorinated biphenyl (PCB)-contaminated. (SP.15.1)

Underground Storage Tank (UST) Management

- No records of release detection monitoring. (UT.40.1)
- No drawings, schematics, or information as to the type of UST at the facility (UT.70.1 and UT.70.2)
- USTs abandoned without correct closure or no documentation of state approved closure. (UT.1.2 and category UT.75)

Wastewater Management

- No NPDES/SPDES permit. (WW.10.1)

Appendix A

Environmental Compliance Questionnaire

Please fill out this questionnaire as completely as possible. It will provide background information necessary to plan and conduct an environmental compliance audit at the facility.

Name of Facility:_____

Location/State:_____

County:_____

Region:_____

Organizational Code:_____

Point of Contact:_____

Phone Number:_____

Date Completed:_____

QUESTION/DESCRIPTION	RESPONSE	REFERENCE (If YES, see checklist items:)
Section 1. Air Emissions Management		
1. Does the facility operate a fuel burner (central steam plant, or hot water steam boiler) or incinerator?	_____	A.1.1, A.1.5, A.1.6
If YES for boilers, how large and what fuel is used? Size Fuel _____ _____ _____ _____ _____ _____		
If Yes for Incinerators, which of the following is burned (circle the applicable option): trash plant waste animal carcasses other _____		
2. Does the facility dispense, store, or transfer gasoline? Type: _____	_____	A.55.1 through A.55.6
3. Is the facility located in an area with an oxygenated gasoline program?	_____	A.55.3
4. Does the facility use any degreasers (solvent baths)? What is used in the degreasers? _____	_____	A.116.1 through A.118.7
5. Does the facility procure/use CFCs or halon substances?	_____	A.85.1 through A.85.4
6. Does the facility repair any units containing refrigerant (circle the applicable options): motor vehicles air conditioners refrigerators freezers window air conditioning units building (central) refrigeration	_____	A.90.1 through A.90.19
Section 2. Drinking Water Management		

QUESTION/DESCRIPTION	RESPONSE	REFERENCE (If YES, see checklist items:)
1. Does the facility purchase its drinking water from a nearby municipality's water system?	_____	None applicable
2. Does the facility treat and distribute its own drinking water? If yes, answer the following: How many people (family members included) reside year round on the refuge?_____ Does the Visitor's Center have its own drinking water fountain?_____ How many visitors does the facility average in a year?_____ What is typically the largest number of visitors in any one month?_____	_____	DW.1.1 through DW.30.3
3. Does the facility draw water from its own well?	_____	DW.1.2
4. Has the facility been classified by the state as a community water system?	_____	DW.35.1 through DW.50.10
5. Has the facility been classified by the state as a noncommunity water system?	_____	DW.60.1 through DW.65.2
6. Has the facility been classified by the state as a nontransient noncommunity, water system?	_____	DW.70.1 through DW.78.10
7. Has the facility been classified by the state as a transient noncommunity water system?	_____	DW.80.1
8. Is the facility located near a sole source aquifer?	_____	DW.95.1
Section 3. Hazardous Materials Management		
1. Have there been any spills or releases of hazardous substances such as paints, solvents, acids, fuel, and/or pesticides at the facility?	_____	HM.20.1 through HM.20.5
2. Does the facility stored onsite more than 1379 gal of fuel at any one time or 1350 lb of formalin?	_____	HM.30.1 through HM.30.3
3. Does the facility operate a laboratory?	_____	HM.15.1 through HM.15.4

QUESTION/DESCRIPTION	RESPONSE	REFERENCE (If YES, see checklist items:)
4. Does the facility store any flammable/combustible liquids (i.e., paints, solvents) in lockers, storage sheds, tanks, or industrial areas? (circle applicable types of storage)	_____	HM.25.1 through HM.42.5
5. Does the facility store compressed gases?	_____	HM.45.1 and HM.45.2
6. Does the facility store acids?	_____	HM.47.1
7. Does the facility transport or offer for transport hazardous materials?	_____	HM.50.1 through HM.50.12
Section 4. Hazardous Waste Management		
1. Is the facility a producer/generator/creator of hazardous waste? Examples include waste paint, waste solvent, waste paint thinner, waste acids, and waste batteries.	_____	HW.1.1 through HW.10.4
2. Does the facility generate less than 100 kg [220.46 lb, approx. 26.5 gal] of hazardous waste in 1 mo?	_____	HW.15.1 through HW.15.11
3. Does the facility generate more than 100 kg [220.46 lb] but less than 1000 kg [2204.62 lb, approx. 265 gal] of hazardous waste in 1 mo?	_____	HW.20.1 through HW.45.5
4. Does the facility generate more than 1000 kg [2204.62 lb] of hazardous waste in 1 mo?	_____	HW.55.1 through HW.110.6

The following are hazardous wastes that may typically be found at a facility (check if used at this facility and indicate amount typically used in a year):

solvents *_____ liquid paint or spray paint booth air filters_____

paint stripper or thinner _____ pesticides, insecticides, herbicides _____

ammunition, explosives _____ battery acid/unserviceable batteries _____

Fluorescent light bulbs_____

printing ink, ink solvents, and cleaners _____

absorbent material and soil contaminated with hazardous waste _____

used oil (some states consider this a hazardous waste)_____

other _____

QUESTION/DESCRIPTION	RESPONSE	REFERENCE (If YES, see checklist items:)
other _____		
other _____		
*This includes trichloroethane, methylene chloride, tetrachloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, chlorinated fluorocarbons, toluene, MEK, mineral spirits, xylene.		
5. Does the facility transport hazardous waste in its own vehicles?	_____	HW.120.1 through HW.120.5
6. Is the facility considered a treatment, storage, and disposal facility? If yes, indicate if it is: Interim Status _____ Permitted (Part B Permit) _____	_____	See the regulations
Section 5. Pesticide Management		
1. Do facility personnel engage in the application of pesticides?	_____	PM.1.2, PM.5.1 through PM.45.2
2. Does the facility use contractor personnel to apply pesticides?	_____	PM.1.2, PM.5.1 through PM.45.2
3. Does the facility store, mix, or formulate pesticides?	_____	PM.47.1 through PM.48.8
4. Does the facility store/use pesticides that are labeled DANGER, WARNING, POISON, or with the skull and crossbones?	_____	PM.48.1 through PM.48.8
5. Does the facility apply agricultural pesticides?	_____	PM.20.1 through PM.20.2
6. Does the facility dispose of pesticides?	_____	PM.55.1 through PM.55.6
Section 6. Petroleum, Oil, and Lubricant (POL) Management		
1. Does the facility have a Spill Prevention Control and Counter measure (SPCC) plan?	_____	PO.5.1 through PO.5.8
2. Have there been any discharges or spills of petroleum products at the facility of more than 5 gal to the environment?	_____	PO.15.1 and PO.15.2
3. Does the facility have any aboveground POL storage tanks that are over 660 gal?	_____	PO.40.1 through PO.40.4
4. Does the facility have any pipelines?		PO.45.1 through

QUESTION/DESCRIPTION	RESPONSE	REFERENCE (If YES, see checklist items:)
	_____	PO.45.11
5. Does the facility generate/store used oil?	_____	PO.60.1 through PO.90.1
Section 7. Solid Waste Management		
1. Does the facility collect or store solid waste onsite?	_____	SW.10.1 through SW.10.8
2. Does the facility contract out the collection of its solid waste?	_____	SW.1.5
3. Does the facility recycle anything?	_____	SW.25.1 and SW.25.2
If YES, which of the following is recycled: paper glass beverage cans cardboard batteries used oil fluorescent light bulbs other? _____		
4. Does the facility have any dumps/landfills/land disposal sites on the property?	_____	SW.30.1 through SW.40.1
Active?_____ Closed? _____ If closed, when was it closed?_____ If known, what was typically placed in the dump/landfill/disposal site? _____ _____		
5. Is the facility planning or operating a new landfill?	_____	SW.45.1 through SW.45.3
6. Does the facility handle or dispose of medical waste such as needles, bloody wastes, pathogenic waste, etc.?	_____	SW.110.1 through SW.110.6
Section 8. Special Pollutants Management		
1. Does the facility have any equipment that contains PCBs?	_____	SP.5.1 through SP.45.11
If YES, indicate which of the following are at the facility:		

QUESTION/DESCRIPTION	RESPONSE	REFERENCE (If YES, see checklist items:)
transformers capacitors circuit breakers electromagnets switches heat transfer systems voltage regulators reclosers light ballast other _____		
2. Does the facility use PCBs in research?	_____	SP.30.1
3. Has the facility had a PCB spill?	_____	SP.20.1 through SP.20.3
4. Does the facility store PCBs or PCB items?	_____	SP.35.1 through SP.35.6
5. Does the facility transport or dispose of items containing PCBs?	_____	SP.40.1 through SP.45.11
6. Has the facility surveyed its buildings for asbestos? Which sites tested positive for asbestos? _____	_____	SP.55.1 through SP.55.4
7. Does the facility have personnel that remove asbestos, perform maintenance work on asbestos covered structures, pipes, or insulation?	_____	SP.65.1 and SP.65.2
8. Have structures at the facility which contain asbestos under gone, or are currently undergoing, renovation, stripping, or demolition?	_____	SP.60.1 through SP.60.9
9. Do facility personnel transport or dispose of asbestos-containing waste?	_____	SP.70.1 through SP.70.4
10. Has the facility conducted a radon survey of its buildings?	_____	SP.80.1 through SP.80.3
11. Has the facility received any noise complaints?	_____	SP.85.1
Section 9. Underground Storage Tank (UST) Management		
1. Does the facility have any USTs in the process of being		UT.10.1

QUESTION/DESCRIPTION	RESPONSE	REFERENCE (If YES, see checklist items:)
replaced or upgraded? How many and what are their contents?_____ _____	_____	
2. Has the facility installed any new USTs (after May 1986)? How many and what are their contents?_____ _____	_____	UT.15.1 through UT.15.5
3. Have any of the facility USTs been closed? How many?_____	_____	UT.75.1 through UT.75.7
4. Have any of the facility USTs undergone a change in service? How many? _____	_____	UT.75.1 through UT.75.7
Section 10. Wastewater Management		
1. Does the facility have any potential sources discharging to the environment? (circle the applicable) wastewater treatment plant oil/water separator washrack septic system	_____	WW.10.1 through WW.10.6
2. Does the facility have a NPDES/SPDES permit?	_____	WW.10.1 through WW.10.6
3. Does the facility discharge to a local wastewater treatment plant? (circle the appropriate sources of discharge) domestic sewage wastewater treatment plant oil/water separator washrack	_____	WW.25.1 through WW.25.9
4. Has the facility had any pretreatment standards imposed upon it by the local wastewater treatment plant?	_____	WW.1.2
5. Does the facility operate a feedlot?	_____	WW.45.1
6. Does the facility do land application of sludge?		WW.105.1

QUESTION/DESCRIPTION	RESPONSE	REFERENCE (If YES, see checklist items:)
7. Does the facility do land disposal of sludge?	_____	through WW.125.8 WW.135.1 through WW.140.6
8. Does the facility incinerate sludge?	_____	WW.150.1 through WW.150.8

Signature of individual completing this form:_____

Date completed:_____

Pollution Control Records

ATTENTION: The following records should be available for review by the audit team either prior to the audit or immediately upon arrival at the facility. (NOTE: Not all facilities will have, or are even required to have, all of the following.)

General

1. Copies of NOVs, USEPA audit reports, or waivers issued to the facility in any of these areas and a site map.

Air Emissions Management

1. Air emissions inventory.
2. All air related permits.
3. A list of steam generating units and boilers and their size, fuel used, and locations.
4. Emissions monitoring and operating records
5. Air emissions episode plan
6. CFC training certification

Drinking Water Management

1. Copies of drinking water test results.
2. Copies of reports to the state.
3. Permit.
4. Operator certification.
5. UIC records.
6. Sanitary surveys.

Hazardous Materials Management

1. A list of hazardous material storage/use areas.
2. Pollution Prevention Plan.
3. MSDSs.
4. Documentation of personnel training.
5. The Hazard Communication Plan.
6. A copy of any reports of spills.
7. Copies of the Tier I or Tier II reports.
8. Chemical Hygiene Plan.

Hazardous Waste Management

1. The Hazardous Waste Management Plan.
2. A list of hazardous wastes generated at the facility.
3. USEPA identification number.
4. Manifests and exception reports.
5. Any permits.
6. The biennial report.
7. Personnel training records.

Pesticides Management

1. The Pesticide Management Plan.
2. A list of pesticide storage sites.
3. Application records.
4. MSDSs for pesticides.
5. Personnel Certifications for applicators.
6. Contracts for pesticide application.

POL Management

1. The SPCC plan.
2. Used oil disposal records.
3. Spill training documentation.

Solid Waste Management

1. Any contracts with waste haulers.
2. Any recycling plans.
3. All documentation pertaining to landfill operation or closure.
4. Records on groundwater sampling resulting from monitoring wells.

Special Pollutants Management

1. The PCB inventory.
2. The PCB annual report.
3. The results of the asbestos survey.
4. Asbestos training records.
5. Noise complaints.
6. Radon survey results.
7. Inspection, storage, and maintenance records for PCBs and asbestos containing materials.

Underground Storage Tank (USTs) Management

1. Closure documentation/approval.
2. A list of all USTs and their locations.
3. Release detection documentation.
4. Integrity test results.
5. Site contamination reports after tank removals.

Wastewater Management

1. All NPDES/SPDES permits and associated maintenance and monitoring records.
2. Maps of the storm, sanitary, and industrial sewers.
3. A copy of pretreatment standards imposed on the facility.
4. Test results on sludge disposed of through land application, land disposal, or incineration.
5. Locations of holding ponds, sedimentation pits, and open/end of-pipe discharge points.

Appendix B

Informal Audits

In Fiscal Year (FY) 1995 the U.S. Fish and Wildlife Service implemented an environmental compliance auditing program to assist its field stations in ensuring compliance with Federal, State, and local environmental regulations. Due to their size and/or configurations, some of our facilities do not warrant a formal onsite audit by a team of three individuals and the associated travel costs. Therefore, the EFC in cooperation with the Regional Environmental Coordinators has developed a process that is called an "informal audit".

The informal audit, or self audit, will be performed by station personnel through the use of the attached questionnaire. Prior to the informal audit, the station, Regional Environmental Coordinator, and perhaps a person from the EFC will participate in an inbrief conference call to explain and answer any questions associated with the process.

After the station personnel have physically walked through their facilities and addressed each item in the questionnaire, an outbrief will be accomplished through a conference call with the Regional Environmental Coordinator, and perhaps a person from the EFC.

This is not intended to be a desk audit. A detailed visual inspection of each building and associated facilities must be performed to meet the intent of the informal auditing process. The intent is to accomplish this process in a 30-day period.

Informal Compliance Audit

Please fill out this questionnaire as completely as possible.

Name of Facility:_____

Location/State:_____

County:_____

Region:_____

Organizational Code:_____

Point of Contact:_____

Phone Number:_____

Date Completed:_____

Has the facility received a Notice of Violation (NOV) or Notice of Noncompliance (NON) from the state, county, or local government for any environmental issue? _____

If yes, what was done as a result of the NOV/NON? _____

_____

_____

_____

_____

_____

_____

QUESTION/DESCRIPTION

Section 1. Air Emissions Management

1. Does the facility operate a fuel burner (central steam plant, or hot water steam boiler) or incinerator?

   If YES for boilers, how large and what fuel is used?

Size	Fuel	Emissions tested for:
_____	_____	_____
_____	_____	_____
_____	_____	_____

   If Yes for Incinerators, which of the following is burned (circle the applicable option):

   trash
   plant waste
   animal carcasses
   other _____

2. Has emissions testing been done on any of the facilities air emission sources other than boilers?
   _____

3. Are there labels on the facility fuel dispensing pumps indicating what type of fuel is being dispensed?
   _____

4. Does the facility have any air quality permits? _____

5. Does the facility do any open burning? _____

6. Does the facility use any degreasers (solvent baths)? What cleaner is used in the degreasers? _____

   Where is used solvent disposed of and how often? _____

   Is the degreaser lid left open when not in use? _____

7. Does the facility repair any units containing refrigerant? (circle the applicable options)

   motor vehicles air conditioners
   refrigerators
   freezers
   window air conditioning units
   building (central) refrigeration

8. Have the facility vehicles undergone vehicle emissions testing? _____

Section 2. Drinking Water Management

QUESTION/DESCRIPTION

1. Does the facility purchase its drinking water from a nearby municipality's water system?_____

2. Does the facility treat and distribute its own drinking water? If yes, answer the following:

   How many people (family members included) reside year round on the station? _____

   How many service connections (i.e. water distribution lines into buildings) are at the facility? ____

   Does the Visitor's Center/Picnic area have its own drinking water fountain? _____

   How many visitors does the facility average in a year?_____

   What is typically the largest number of visitors in any one month? _____

3. Does the facility have any drinking water wells in use? How many?_____

   Are the wells all drawing from the same aquifer? _____

4. Has the drinking water at the facility been tested for anything (e.g. lead, bacteria, arsenic etc.)? If yes, what and when?

Substance	Last tested (date)	Future Planned Testing (date)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

5. Has the drinking water ever failed a bacteriological test (coliform)? _____

   If yes, what did the facility do in response? _____

   _____

   _____

6. Does the facility have any abandoned water wells? _____

   Have these wells been officially closed? _____

   Is there paperwork documenting the closure? _____

Section 3. Hazardous Materials Management
(Please attach a copy of the hazardous materials inventory for the facility to this questionnaire.)

1. Does the facility have a written hazard communication plan that is tailored to their facility? (For laboratories this is called a Chemical Hygiene Plan). _____

2. Does the facility conduct onsite (at the facility) training for the storage/handling of hazardous substance? This includes actions such as how to read a Material Safety Data Sheet (MSDS), safety

QUESTION/DESCRIPTION

equipment needed for chemical use._____

Is the training done in the following circumstances:

For each new employees/volunteers ?_____
Whenever a new chemical/hazardous substance is brought onsite for use? _____
Whenever a new process/procedure is implemented? _____

3. Does the facility have MSDSs for all the hazardous substances stored onsite? _____

Where are they kept? _____

Who has access to the MSDSs? _____

4. Do all containers have hazard class labels identifying contents and hazard warnings (i.e. flammable, corrosive, explosive etc.)?_____

5. Does the facility store onsite more than 1379 gal of fuel at any one time or 1350 lb (148 gal at 30% solution) of formalin? _____

If yes, have these amounts been reported to the local fire department or State emergency response commission? _____

6. Does the facility operate a laboratory? If yes, describe the activities that occur

_____
_____
_____

7. Does the facility store any flammable/combustible liquids (i.e., paints, solvents) in (circle applicable types of storage):

lockers,
storage sheds,
storage rooms within buildings
tanks?
outdoor storage
other, where?_____

8. Does the facility store incompatible materials together in such a way that if there is a spill a reaction will occur? (See Appendix A) _____

Examples include storing flammable substances with corrosive substances.

9. Does the facility store any compressed gases? If yes, what?_____

_____

Where are the full and empty cylinders stored?_____

Are the full and empty cylinders stored together? How far apart? _____

Are the cylinders containing gas chained to a solid structure (a wall, a post, etc.?) _____

QUESTION/DESCRIPTION

Section 4. Hazardous Waste Management

1. Is the facility a producer/generator/creator of hazardous waste? _____

Examples include waste paint, waste solvent, waste paint thinner, waste pesticides, waste acids, waste batteries, expired hazardous materials. (NOTE: Solvents include trichloroethane, methylene chloride, tetrachloroethylene, carbon tetrachloride, chlorinated fluorocarbons, toluene, MEK, mineral spirits, and xylene)

List the types of waste being generated and typically how much is disposed of in 1 yr.:

Waste	Quantity	Where did it go?
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

2. Does the facility have outdated hazardous materials that should be discarded as hazardous waste? What types?

_____
_____
_____

3. Does the facility recycle or send to a recycler/waste burner any of its hazardous waste? If yes, does the facility have documentation of the amounts being sent?_____
_____

4. Does the facility generate/dispose of less than 100 kg [220.46 lb, approx. 26.5 gal] of hazardous waste in 1 mo?_____

5. Does the facility generate/dispose of more than 100 kg [220.46 lb] but less than 1000 kg [2204.62 lb, approx. 265 gal] of hazardous waste in 1 mo? _____

6. Does the facility generate/dispose of more than 1000 kg [2204.62 lb] of hazardous waste in 1 mo?
_____

7. Has anyone at the facility been designated as responsible for the hazardous waste activities at the site? Who? _____

8. Has anyone at the facility had training on how to handle hazardous waste? _____
_____

9. What do the labels on containers of hazardous waste awaiting disposal say?_____
_____

10. Where is hazardous waste stored at the facility? _____

QUESTION/DESCRIPTION

11. Does the facility utilize any services such as Safety Kleen for the recycling of its hazardous waste? _____

12. Does the facility have a firing range? _____

13. Does the facility have any contaminated sites? _____

Section 5. Pesticide Management

1. Do facility personnel engage in the application of pesticides, herbicides, fungicides, or termaticides? If yes, what products are used and how much is used in a year?

Product name	Amount used
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

2. Does the facility use contractor personnel to apply pesticides? _____

3. Is anyone at the facility licensed or certified to apply pesticides by the state? _____

   Are Service employees which apply pesticides/herbicides undergoing health monitoring for the effects of the pesticides/herbicides? _____

4. Where are pesticides/herbicides stored at the facility? _____

   _____

   Does the area have a drain? if yes, where does the drain go? _____

5. Where are pesticides/herbicides mixed for application at the facility? _____

   _____

   Does the area have secondary containment?_____

   Does the area have a drain? if yes where does the drain go? _____

6. What personal protective equipment does the facility have available for its pesticide applicators?

   _____

   _____

7. Are there at least 2 people present for each mixing and application?_____

8. How does the facility dispose of pesticides? _____

   _____

QUESTION/DESCRIPTION

Section 6. Petroleum, Oil, and Lubricant (POL) Management

1. How many gallons of petroleum products are stored at the facility? Include all fuels, hydraulic flu ids, lubricating oils etc. in tanks, barrels, and smaller containers. _____

   _____

   How many gallons are stored aboveground?_____
   How many gallons are stored underground? _____

2. Does the facility have a Spill Prevention Control and Countermeasure Plan tailored to its' activities?

   _____

3. Does the facility have any aboveground POL storage tanks that are over 660 gal? _____
   If yes, do these tanks have secondary containment? _____

4. Do the aboveground storage tanks at the facility undergo tank integrity tests or is there a reconciliation log of the input and outflow of the tank in order to check for leaks? _____

   _____

5. How does the facility dispose of its used oil? _____

   _____

   Where are the records of disposal kept? _____

6. What does the label on used/waste oil tanks or drums say? _____

   _____

Section 7. Solid Waste Management

1. Where does the trash/garbage from the facility, including animal carcasses, go for disposal?

   _____
   _____
   _____

2. Does the facility have any dumps/landfills/land disposal sites on the property?

   Active?_____
   Closed? _____ If closed, when was it closed?_____
   If closed, was the state/county consulted? _____
   If closed, where are the closure records? _____

   If known, what was typically placed in the dump/landfill/disposal site?

   _____
   _____
   _____

3. Does the facility operate a boneyard or storage area for excess materials? If yes, what is currently in

QUESTION/DESCRIPTION
the boneyard?

4. Does the facility handle or dispose of human medical waste such as needles, bloody wastes, pathogenic waste, etc.? If yes, how? _____

5. Do refuse containers have lids? _____

Section 8. Special Pollutants Management

1. Does the facility have any electrical transformers on the property? If yes, do they belong to the Service or the Utility company and are they marked in any manner indicating whether or not they contain PCBs?

2. Does the facility use PCBs in research? _____

3. Does the facility have a copy of an asbestos survey of the buildings? _____

   If yes, did any of the buildings test positive and how did they test positive? _____

   If no, when were they built? _____

4. Does the facility have personnel that remove asbestos, perform maintenance work on asbestos covered structures, pipes, or insulation? _____

   Are these personnel certified to perform work on asbestos? _____

5. How is asbestos containing waste from the facility disposed of? _____

   What records are there of the disposal actions? _____

6. Does the facility have a copy of a radon survey of its buildings?

   Were any of the test results over 4 pci? _____

QUESTION/DESCRIPTION

If yes, what remediation actions were performed? _____

7. Has the facility received any noise complaints from its neighbors?_____

Section 9. Underground Storage Tank (UST) Management

1. Does the facility have any USTs in the process of being replaced or upgraded?

   How many, what are their contents, and what is being done?_____

   _____

   _____

   _____

   _____

2. Have any of the facility USTs been removed?

   How many?_____

   Has the state/county given you a letter of final closure for the sites where tanks were removed?

   _____

3. Does the facility have any USTs that are still in the ground that are not in the process of being replaced or upgraded? If yes, how old are they?

_____

   _____

   How is monitoring for leak detection done on these USTs? _____

   _____

   _____

Section 10. Wastewater Management

1. Does the facility have any potential sources discharging to the environment? (circle the applicable)

   wastewater treatment plant
   oil/water separator
   washrack
   septic system (with or without leach fields)
   other _____

What is discharged?

Source	Effluent
_____	_____
_____	_____
_____	_____

QUESTION/DESCRIPTION

_____ _____
_____ _____

2. Does the facility have a National Pollutant Discharge Elimination System (NPDES)/ State Pollutant Discharge Elimination System (SPDES) permit?

If yes, what tests/samples does it require? _____
_____
_____

3. Does the facility discharge to a local wastewater treatment plant? (circle the appropriate sources of discharge)

domestic sewage
wastewater treatment plant
oil/water separator
washrack
laboratory sinks

What is discharged?

Source	Effluent
_____	_____
_____	_____
_____	_____

4. Has the facility had any pretreatment standards imposed upon it by the local wastewater treatment plant? An example of a pretreatment standards would be a prohibition from putting specific substance down the drain or a limit on how much of a substance can go down the drain or the concentration of substances that can be put down the drain.

_____
_____
_____

5. If the facility has a wastewater treatment facility other than a septic system what is the treatment process?

_____
_____

Date completed:_____

Signature _____

Hazardous Materials/Hazardous Waste Storage Incompatibility Chart

Substances in bold have detailed example lists on the next page.

If the material contains:	It may not be stored with any of the following:
Acid (pH below 2.0)	**Caustics** (pH above 12.5) **Reactive Metals** Alcohol Water Aldehydes Halogenated, Nitrated, or Unsaturated Hydrocarbons **Reactive Organic Compounds and Solvents** Spent Cyanide and Sulfide Solutions **Oxidizers**
Caustic (pH above 12.5)	**Acid** (pH below 2.0) **Reactive Metals** Alcohol Water Aldehydes Halogenated, Nitrated, or Unsaturated Hydrocarbons **Reactive Organic Compounds and Solvents**
Reactive Metals	**Caustics** **Acids** Alcohol Aldehydes Halogenated, Nitrated, or Unsaturated Hydrocarbons **Reactive Organic Compounds and Solvents** **Oxidizers**
Reactive Organic Compounds and Solvents	**Caustics** **Acids** **Reactive Metals**
Spent Cyanide and Sulfide Solutions	**Acids**
Oxidizers	Acetic or Other Organic Acids Concentrated Mineral Acids **Reactive Metals** **Reactive Organic Compounds and Solvents** **Ignitable [Flammable/Combustible] Wastes***

* "Ignitable" in this context refers to substances with a flashpoint below 140× °F, and includes:
Combustible substances, with a flashpoint below 140× °F
Flammable substances, with a flashpoint below 100× °F.

Some Deadly Combinations

Acids + Oil or Grease = Fire

Flammable Liquids + Hydrogen Peroxide = Fire/Explosion

Acids + Caustics = Heat/Spattering

Aluminum Powder + Ammonium Nitrate = Explosion

Caustics + Epoxies = Extreme Heats

Sodium Cyanide + Sulfuric Acid = Lethal Hydrogen Cyanide

Chlorine Gas + Acetylene = Explosion

Ammonia + Bleach = Noxious Fumes

In general: **Reactives** must be segregated from **Ignitables**
Acids must be segregated from **Caustics**
Corrosives should be segregated from **Flammables**
Oxidizers should be segregated from **EVERYTHING**
Many Corrosives are "Water Reactive"

Most **Organic Reactives** must be segregated from **Inorganic Reactives** (metals)

Ignitables (Flammables/Combustibles)	**Corrosives**	
	Acids	**Caustics**
Carburetor Cleaners Engine Cleaners Epoxy, Resins, Adhesives, and Rubber Cements Finishes Fuels Lacquers Paints Paint Thinners Paint Wastes Pesticides that contain Solvents (such as Methyl Alcohol, Ethyl Alcohol, Isopropyl Alcohol, Toluene, Xylene). Petroleum Solvents (Drycleaning Fluid) Solvents: Acetone Benzene Carbon Tetrachloride (Carbon Tet) Ethanol (Ethyl Alcohol) Ethyl Benzene Isopropanol (Isopropyl Alcohol) Kerosene (Fuel Oil #1) Methanol (Wood Alcohol) Methyl Ethyl Ketone (MEK) Petroleum Distillates Tetrahydrofuran (THF) Toluene (Methacide, Methylbenzene, Methylbenzol, Phenylmethane, Toluol, Antisal 1A) White Spirits (White Spirits, Mineral Spirits, Naptha) Xylene (Xylol) Stains Stripping Agents Varsol Waste Fuels Waste Ink Wax Removers Wood Cleaners	Battery Acids Degreasers and Engine Cleaners Etching Fluids Hydrobromic Acid Hydrochloric Acid (Muriatic Acid) Nitric Acid (<40%) (Aquafortis) Phosphoric Acid Rust Removers Sulfuric Acid (Oil of Vitriol)	Acetylene Sludge Alkaline Battery Acids Alkaline Cleaners Alkaline Degreasers Alkaline Etching Fluids Lime and Water Lime Wastewater Potassium Hydroxide (Caustic Potash) Rust Removers Sodium Hydroxide (Caustic Soda, Soda Lye)
	Reactive Metals Lithium (Batteries) Aluminum Beryllium Calcium Magnesium Sodium Zinc Powder	**Reactive Organic Compounds and Solutions** Alcohols Aldehydes Chromic Acids (from chrome plating, copper stripping and aluminum anodizing) Cyanides (from electroplating operations) Hypochlorides (from water treatment plants, swimming pools, sanitizing operations) Organic Peroxides (including Hydrogen Peroxide) Perchlorates Permanganates Sulfides
	Oxidizers Chlorine Gas Nitric Acid (>40%), aka Red Fuming Nitric Nitrates (Sodium Nitrate, Ammonium Nitrate) Perchlorates Perchloric Acid Perioxides Calcium Hypochlorite (>60%)	

Definitions

- *Aquifer* - a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding groundwater to wells or springs (40 CFR 503.21(b)).

- *Acute Hazardous Waste* - any waste listed under 40 CFR 261.31 - 261.33(c) with a hazard code of H. These include USEPA Hazardous waste numbers: F020, F021, F022, F023, F026, and F027 (40 CFR 261.31 through 261.33).

- *Appliance* - any device which contains and uses a Class I or Class II substance as a refrigerant and which is used for household or commercial purposes, including any air conditioner, refrigerator, chiller, or freezer (40 CFR 82.152).

- *Asbestos* - substances comprised of or derived from actinolite, amosite, anthophyllite, chrysotile, crocidolite, or tremolite (40 CFR 61.14).

- *Asbestos-Containing Waste Materials* - means mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of 40 CFR 141. This term also includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. However, as applied to demolition and renovation operations, this term includes regulated ACM waste and materials contaminated with asbestos including disposable equipment and clothing (40 CFR 61.141).

- *Asbestos Material* - asbestos or any material containing asbestos (40 CFR 61.141).

- *Bulky Wastes* - large items of solid waste such as household appliances, furniture, large auto parts, trees, branches, stumps, and other oversize wastes which large size precludes or complicates their handling by normal solid waste collection, processing, or disposal methods (40 CFR 243.101).

- *Certified Applicator* - any individual who is certified by the USEPA or the state to use or supervise the use of any restricted use pesticide covered by that individual's certification (7 CFR 110.2).

- *Characteristics of Hazardous Waste* - the characteristics of ignitability, corrosivity, reactivity, and toxicity which identify hazardous waste (40 CFR 261.20 through 261.24).

- *Cold Cleaning Machine* - any device or piece of equipment that contains and/or uses liquid solvent, into which parts are placed to remove soils from the surface of the parts or to dry the parts. Cleaning machines that contain and use heated, nonboiling, solvent to clean the parts are classified as cold cleaning machine (40 CFR 63.461).

- *Combustible Liquid* - a liquid having a flashpoint at or above 100 ×F (37.8 ×C). Combustible liquids are categorized as Class II or Class III liquids and are further subdivided as follows (29 CFR 1910.106(a)(18)):
    1. Class II liquids are those having a flashpoint at or above 100 ×F (37.8 ×C), and below 140 ×F (60 ×C) except any mixture having components with flashpoints of 200 ×F (93.3 ×C) or higher, the volume of which makes up 99 percent or more of the total volume of the mixture.
    2. Class III A liquids are those having flashpoints at or above 140 ×F (60 ×C), and below 200 ×F (93.3 ×C) except any mixture having components with flashpoints of 200 ×F (93.3 ×C) or higher, the total volume of which make up 99 percent of more of the total volume of the mixture.
    3. Class III B liquids are those having flashpoints at or above 200 ×F (93.3 ×C).

- *Commercial Applicator* - a certified applicator, other than a private applicator, who uses or supervises the use of any pesticide, for any purpose, on any property, or performs other pest control related activities (40 CFR 171.2).

- *Community Water System* - a public water system that serves at least 15 service connections used by year round residents or regularly serves at least 25 year-round residents (40 CFR 141.2)

- *Construction and Demolition Wastes* - the waste building materials, packaging and rubble resulting from the construction, renovation, repair, and demolition operation on pavements, houses, commercial buildings, and other structures (40 CFR 243.101).

- *Deferred USTs* - USTs which are exempt from meeting the requirements in 40 CFR 280 except those concerning release response and corrective action for UST systems containing petroleum or hazardous substances in 40 CFR 280.60 through 280.67. These tanks include (40 CFR 280.10(e):
  1. wastewater treatment tank systems
  2. any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954
  3. any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
  4. airport hydrant fuel distribution systems
  5. UST system with field-constructed tanks.

  See also the definitions for USTs and Excluded USTs.

- *Effluent Limitations* - any restriction established by the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources, other than new sources, into navigable waters, the waters of the contiguous zone, or the ocean (40 CFR 401.11(i)).

- *Excluded USTs* - these are USTs which are not required to meet the requirements found in 40 CFR 280 and include (40 CFR 280.10(b)):
  1. any UST system holding hazardous wastes listed under Subtitle C of the *Solid Waste Disposal Act* (SWDA), or a mixture of such hazardous waste and other regulated substances
  2. any wastewater treatment tank system that is part of a wastewater treatment facility regulated under Section 402 or 307(b) of the *Clean Water Act* (CWA)
  3. equipment or machinery that contains regulated substances for operational purposes such as hydraulic lift tanks and electrical equipment
  4. any UST system whose capacity is 110 gal [416.40 L] or less
  5. any UST system that contains a de minimis concentration of a regulated substance
  6. any emergency spill or overflow containment UST system that is expeditiously emptied after use.

  See also the definitions for Deferred USTs and USTs.

- *Extremely Hazardous Substances* - all substances listed in Appendices A and B in 40 CFR 355 (see the column labeled in Appendix 3-1) (40 CFR 355.20).

- *Federally Enforceable* - all limitations and conditions enforceable by the Administrator, including those requirements developed pursuant to 40 CFR 60 and 61, requirements within any applicable state implementation plan, and any permit requirements established pursuant to 40 CFR 52.21 or under 40 CFR 51.18 and 40 CFR 51.24 (40 CFR 60.41b).

- *Flammable Aerosol* - an aerosol that is required to be labeled FLAMMABLE under the *Federal Hazardous Substance Labeling Act* (15 USC 1261). These aerosols are considered Class IA liquids (29 CFR 1910.106(a)(19)).

- *Flammable Liquid* - a liquid with a flashpoint below 100 ×F (37.8 ×C) except any mixture having components with flashpoints of 100 ×F (37.8 ×C) or higher, the total of which make up 99 percent or more of the total volume of the mixture. Flammable liquids are categorized as Class 1 liquids, and are further subdivided as follows (29 CFR 1910.106(a)(19)):
    1. Class IA are those that have a flashpoint below 73 ×F (22.8 ×C) and boiling point below 100 ×F (37.8 ×C)
    2. Class IB are those that have flashpoints below 73 ×F (22.8 ×C) and boiling points at or above 100 ×F (37.8 ×C)
    3. Class IC are those that have flashpoints at or above 73 ×F (22.8 ×C) and below 100 ×F (37.8 ×C).

- *Flashpoint* - the minimum temperature at which a liquid gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid. Flashpoints are established using several standard closed cup test methods (29 CFR 1910.106(a)(14)).

- *Friable Asbestos Material* - any material that contains more than 1 percent asbestos by weight and can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure (40 CFR 61.141).

- *Hazardous Chemical* - in relationship to laboratories, a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees (29 CFR 1910.1450(b)).

- *Hazardous Substance* - any substance designated pursuant to 40 CFR 302 (see the column titled Hazardous Substance Reportable Quantity (RQ) in Appendix 3-1) (40 CFR 302.3).

- *Hazardous Waste* - a solid waste identified as a characteristic or listed hazardous waste in 40 CFR 261.3 (40 CFR 260.10).

- *Hazardous Waste Constituent* - a constituent that caused the hazardous waste to be listed in 40 CFR 261, Subpart D (lists of hazardous wastes from nonspecific and specific sources, and listed hazardous wastes), or a constituent listed in the table of maximum concentrations of contaminants for the toxicity characteristic) (40 CFR 260.10).

- *Incompatible Waste* - a hazardous waste that is unsuitable for (40 CFR 280.10):
    1. placement in a particular device or facility because it may cause corrosion or decay of containment materials (e.g., container liners or tank walls)
    2. commingling with another waste or material under uncontrolled conditions because the commingling conditions produce heat or pressure, fire or explosion, violent reaction, toxic dusts, mist, fumes or gases, or flammable fumes or gases.

- *Infectious Waste* - (40 CFR 240.101):
    1. equipment, instruments, utensils, and fomites of a disposable nature from the rooms of patients who are suspected to have or have been diagnosed as having a communicable disease and must, therefore, be isolated as required by public health agencies

2. laboratory wastes such as pathological specimens and disposable fomites (any substance that may harbor or transmit pathological organisms)
3. surgical operating room pathological specimens and disposable fomites attendant thereto and similar disposable materials from outpatient areas and emergency rooms.

- *Laboratory* - a facility where the laboratory use of hazardous chemicals occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a nonproduction basis (29 CFR 1910.1450(b)).

- *Manifest* - the shipping document originated and signed by the generator containing the information required by 40 CFR 262, Subpart B (40 CFR 260.10).

- *Material Safety Data Sheet (MSDS)* - written or printed material which contains information on hazardous chemicals such as common name, physical hazards, health hazards (29 CFR 1910.1200(c)).

- *Medical/Pathological Wastes* - any solid waste that is generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals. This does not include hazardous waste or household waste (40 CFR 259.10).

- *Motor Vehicle Air-Conditioner (MVAC)* - any appliance that is an MVAC as defined in 40 CFR 82, subpart B (40 CFR 82.152).

- *MVAC-Like Appliance* - mechanical vapor compression, open-drive compressor appliances used to cool the driver's or passenger's compartment of a nonroad motor vehicle. This includes the air conditioning equipment found on agricultural or construction vehicles. This definition is not intended to cover appliances using HCFC-22 refrigerant (40 CFR 82.152).

- *Noncommunity Water System* - a public water system that is not a community water system (40 CFR 141.2).

- *Nontransient, Noncommunity Water System (NTNCWS)* - a public water system that is not a community water system and that regularly serves at least 25 of the same persons over 6 mo/yr (40 CFR 141.2).

- *NPDES Permit* - a permit granted by USEPA to a direct discharger which permits wastewater discharge to a watercourse in accordance with the conditions of the permit. NPDES means National Pollutant Discharge Elimination System (40 CFR 403.3(l)).

- *Open Dump* - a land disposal site at which solid wastes are disposed of in a manner that does not protect the environment, are susceptible to open burning, and are exposed to the elements, vectors, and scavengers (40 CFR 240.101).

- *Open Top Vapor Cleaning Machine* - a batch solvent cleaning machine that has its upper surface open to the air and boils solvents to create solvent vapor used to clean and/or dry parts (40 CFR 63.461).

- *PCB or PCBs* - a chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contains such substance (40 CFR 761.3).

- *Pesticide* - any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or disinfectant; and is further categorized into the following (40 CFR 165.1):
    1. Excess pesticides means all pesticides that cannot be legally sold pursuant to the Act or that are to be discarded.
    2. Organic pesticides means carbon-containing substances used as pesticides, excluding metallo-organic compounds.
    3. Inorganic pesticides means noncarbon-containing substances used as pesticides.
    4. Metallo-organic pesticides means a class of organic pesticides containing one or more metal or metalloid atoms in the structure.

- *Point Source* - any discernible confined and discrete conveyance including but not limited to a pipe, ditch, channel, or conduit from which pollutants are or may be discharged (40 CFR 401.11(d)).

- *Public Water System* - a system for providing piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. This term includes (40 CFR 141.2):
    1. any collection, treatment, storage, and distribution facilities under control of the operator of such system
    2. any collection or pretreatment storage facilities not under such control that are used primarily in connection with such system.

  A public water system is either a community water system or a noncommunity water system.

- *Publicly Owned Treatment Works (POTW)* - a treatment works which is owned by the state or a municipality. This includes any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes, and other conveyances only if they convey waste to a POTW (40 CFR 403.3(o)).

- *Radon-222* - a naturally occurring, inert, radioactive gas that is formed from the radioactive decay of uranium.

- *Recover Refrigerant* - to remove refrigerant in any condition from an appliance and to store it in an external container without necessarily testing or processing it in any way (40 CFR 182.52(s)).

- *Recycle Refrigerant* - to extract refrigerant from an appliance and clean refrigerant for reuse without meeting all of the requirements for reclamation. In general, recycled refrigerant is refrigerant that is cleaned using oil separation and single or multiple passes through devices, such as replaceable core filter-driers, which reduce moisture, acidity, and particulate matter. These procedures are usually implemented at the field job site (40 CFR 82.152).

- *Restricted-Use Pesticides* - pesticides designated for restricted use under the provisions of Section 3(d)(1)(c) of FIFRA (40 CFR 171.2).

- *Sanitary Landfill* - a land disposal site employing an engineered method of disposing of solid wastes on land in a manner that minimizes environmental hazards by spreading the solid wastes in thin layers, compacting the solid wastes to the smallest practical volume, and applying and compacting cover material at the end of each operating day (40 CFR 240.101).

- *Sewage Sludge* - solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage, scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludges in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewerage in a treatment works (40 CFR 257.2).

- *Small Appliance* - any of the following products that are fully manufactured, charged, and hermetically sealed in a factory with 5 lb or less of refrigerant (40 CFR 82.152):
    1. refrigerators designed for home use
    2. freezers designed for home use
    3. room air conditioners (including window air conditioners and packaged terminal air conditioners)
    4. packaged terminal heat pumps
    5. dehumidifiers
    6. under-the-counter ice makers
    7. vending machines
    8. drinking water coolers.

- *Small Quantity Generator* - a generator who generates less than 1000 kg [2204.62 lb] or hazardous waste in a calendar month but more than 100 kg [220.46 lb] (40 CFR 260.10).

- *Solvent Cleaning Machine* - any device or piece of equipment that uses halogenated HAP solvent liquid or vapor to remove soils from the surface of materials. Types of solvent cleaning machines include, but are not limited to, batch vapor, in-line vapor, in-line cold, and batch cold solvent cleaning machines. Buckets, pails, and beakers with capacities of 7.6 L (2 gal) or less are not considered solvent cleaning machines (40 CFR 63.461).

- *Spill Prevention, Control, and Countermeasure (SPCC) Plan* - the SPCC plan shall be a carefully thought-out plan prepared in accordance with good engineering practices, and which has the full approval of management at a level with authority to commit the necessary resources (40 CFR 112.3).

- *Treatment Works* - either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature (40 CFR 503.9(aa)).

- *Underground Storage Tank (UST)* - any one or a combination of tanks (including underground pipes connected thereto) that is used to contain an accumulation of regulated substances, and the volume of which (including the volume of underground pipes connected thereto) is 10 percent or more beneath the surface of the ground. This term does not include any (40 CFR 280.12):
    1. farm or residential tank of 1100 gal [4163.95 L] or less capacity used for storing motor fuel for noncommercial purposes
    2. tank used for storing heating oil for consumptive use on the premises where stored
    3. septic tanks
    4. pipeline facility (including gathering lines) which are regulated by other Acts
    5. surface impoundment, pit, pond, or lagoon
    6. stormwater or waste water collection system
    7. flow-through process tank
    8. liquid trap or associated gathering lines directly related to oil or gas production and gathering operations
    9. storage tank situated in an underground area if the storage tank is situated upon or above the surface of the floor such as basements or tunnels

10. tanks holding 110 gal [416.40 L] or less
11. emergency spill and overfill tanks.

(NOTE: The definition of UST does not include any pipes connected to any tank which is described in para (1) through (9) of this definition. Also refer to the definition for Deferred UST and Excluded UST.)

- *Used Oil* - any oil that has been refined from crude oil or any synthetic oil that has been used and as a result of such use is contaminated by physical or chemical impurities (40 CFR 279.1).

- *Used Oil Generator* - any person, by site, whose act or process produces used oil or whose act first causes used oil to become subject to regulation (40 CFR 279.1).

- *Volatile Organic Compound (VOC)* - any compound of carbon, excluding CO, CO_2, carbonic acid, metallic carbides, or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions (40 CFR 51.100).

- *Wetlands* - those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include playa lakes, swamps, marshes, bogs, and similar areas such as sloughs, prairie potholes, wet meadows, prairie river overflows, mudflats, and natural ponds (40 CFR 110.2).

Appendix C

Major Activities at FWS Facilities and Their Related Sections			
Facilities	**Sections**		
	1 Air Emissions Management	**2 Drinking Water Management**	**3 Hazardous Materials Management**
1. Incinerators	•		
2. Heat/Power Production	•		
3. Fuel Storage	•		•
4. Sanitary Wastewater		•	
5. Stormwater Runoff			
6. Sludge Disposal			
7. POL Dispensing	•		
8. Wastewater Treatment			
9. Vehicle Maintenance	•		•
10. Shop Activities	•		•
11. Solid Waste Generation	•		•
12. Water Supply		•	•
13. Hazardous Materials Use		•	•
14. Firefighting Training	•		•
15. PCB Electrical Equipment			
16. Pesticide/Herbicide Use			•
17. Environmental Noise			
18. Emergency Planning			•
19. Asbestos Removal			
20. Underground Storage Tanks			
21. Remodeling Activities			
22. Construction Activities	•		•
23. Soil Removal	•		
24. Laboratories		•	•
25. Unexploded Ordnance			•
26. Medical Waste			•
27. Livestock Management	•		

Major Activities at FWS Facilities and Their Related Sections			
Facilities	**Sections**		
	4 Hazardous Waste Management	**5 Pesticide Management**	**6 POL Management**
1. Incinerators	•		
2. Heat/Power Production			•
3. Fuel Storage			•
4. Sanitary Wastewater		•	
5. Stormwater Runoff			
6. Sludge Disposal	•		
7. POL Dispensing			•
8. Wastewater Treatment	•		
9. Vehicle Maintenance	•		•
10. Shop Activities	•		•
11. Solid Waste Generation			
12. Water Supply			
13. Hazardous Materials Use		•	
14. Firefighting Training			•
15. PCB Electrical Equipment			
16. Pesticide/Herbicide Use		•	
17. Environmental Noise			
18. Emergency Planning	•	•	•
19. Asbestos Removal			
20. Underground Storage Tanks			
21. Remodeling Activities			
22. Construction Activities			
23. Soil Removal			
24. Laboratories	•	•	•
25. Unexploded Ordnance	•		
26. Medical Waste			
27. Livestock Management		•	

Major Activities at FWS Facilities and Their Related Sections				
Facilities	**Sections**			
	7 Solid Waste Management	**8 Special Pollutants Management**	**9 UST Management**	**10 Wastewater Management**
1. Incinerators	•			
2. Heat/Power Production	•			•
3. Fuel Storage			•	
4. Sanitary Wastewater				•
5. Stormwater Runoff				•
6. Sludge Disposal	•			•
7. POL Dispensing			•	
8. Wastewater Treatment	•			•
9. Vehicle Maintenance	•		•	•
10. Shop Activities	•		•	•
11. Solid Waste Generation	•			
12. Water Supply				
13. Hazardous Materials Use				
14. Firefighting Training			•	•
15. PCB Electrical Equipment		•		
16. Pesticide/Herbicide Use				•
17. Environmental Noise		•		
18. Emergency Planning				
19. Asbestos Removal		•		
20. Underground Storage			•	
21. Remodeling Activities		•		
22. Construction Activities				
23. Soil Removal				
24. Laboratories	•			•
25. Unexploded Ordnance	•			
26. Medical Waste	•			
27. Livestock Management	•			•

Appendix D

Organization of Environmental Records

To facilitate environmental compliance audits and management of environmental information, it is important to organize pertinent paperwork in a manner that is clear, concise, and helpful. The following are suggestions for organizing files affiliated with environmental compliance issues. These topics are not hard and fast, just suggestions to be adapted to a facility's particular operations, and will enable the auditors/regulators to quickly review the necessary information.

Drinking Water Management

Correspondence/NOVs (includes all correspondence with state or local authorities other than routine submissions of sampling data and any notices of violation).

Inspections (copies of any and all inspection results by the EPA, state/local, and FWS investigation).

Maintenance and repair (includes all receipt, data, schematics, etc. of any repair or maintenance work).

Operations (includes logs of water treatment done by the FWS facility staff).

Permit and certification (includes a copy of any permit or authorization to operate a drinking after system, a copy of the permit application, and any water treatment plant operator certifications that are required).

Reports (includes copies of all reports submitted to the state/local authorities on sampling results).

Sampling results (includes the results of all sample analyses, chemical and biological).

Well logs for all active wells (including casing, pump, and screen information).

Well closure (create a separate file folder for every well that is closed on the facility).

Hazardous Waste Management

Correspondence/NOVs (includes all correspondence with state or local authorities other than routine submissions of sampling data and any notices of violation).

EPA Identification Number (include the paperwork assigning the facility its EPA Identification Number and hazardous waste generation status).

Inspections (copies of any and all inspection results by the EPA, state/local, and FWS investigation).

Manifests (copies of any and all manifests for hazardous waste).

Training (documentation of training).

Pesticides Management

Application contract.

Application records (what was applied where, when, and by whom).

Correspondence/NOVs (includes all correspondence with state or local authorities other than routine submissions of sampling data and any notices of violation).

Permits/Certification (copies of all permits and the applicator certifications).

Personnel (include training records and health monitoring records.

UST Management (every separate aboveground storage tank should have a separate set of files)

Correspondence/NOVs (includes all correspondence with state or local authorities other than routine submissions of sampling data and any notices of violation).

Closure records, including history of removal of USTs.

Maintenance and repair (includes all receipts, data, schematics etc., of any repair or maintenance work).

Operations (includes logs of visual inspections, capacity reconciliation records, results of tank tightness inspections or pipeline testing).

Registration (includes a copy of the application for registration and the state registration).

Wastewater Management

Correspondence/NOVs (includes all correspondence with state or local authorities other than routine submissions of sampling data and any notices of violation).

Maintenance and Repair (includes all receipts, data, schematics., etc., of any repair or maintenance work on the wastewater treatment works, septic system, or oil/water separators).

Operations (includes logs of activities done to treat the wastewaters).

Permit and Certification (includes a copy of any permit or authorization to operate a wastewater treatment system or septic system, including a copy of the permit application and any water treatment plant operator certifications that are required. If the facility has more than one permit related to wastewater - keep them in separate files).

Pretreatment standards (copy of any pretreatment standards imposed upon the facility by the state/local governments).

Reports (includes copies of all reports submitted to the state/local authorities on sampling results).

Sampling results (includes the results of all samples analysis).

The following are additional files that might be helpful to keep:

Air emissions sources (if you have an air emissions sources that requires emissions testing, create a file for the source include the test data, potential sources requiring emissions testing are incinerators and boiler).

CFC/halons certification, purchase receipts, and records for the quantity of CFCs and halons that were recycled or disposed of.

Chemical Hygiene Plan and training documentation.

Community Right-to-Know (EPCRA) Reports.

Disposal contracts (copy of contracts for pick up and disposal of trash, recyclable, hazardous waste).

Hazardous Communication Program and training documentation.

Material safety data sheets (MSDSs).

Oil/water separators (a separate file for each separator with documentation of its design and when it was last cleaned out).

Open Burning (include any plans, permits, letters of approval, log of burning operations).

Pollution Prevention Plan.

Recycling (includes documentation of quantities of materials being recycled).

Spill Prevention Control and Countermeasure (SPCC) Plan.

Spills/releases (any reports, documentation of spills or releases of any substances).

Used oil (records of the quantity and final disposal site for waste petroleum products, including products that are recycled).

Appendix E

FWS Environmental Compliance Audit Program (ECAP) Inbrief

Purpose

The purpose of this audit is to:

- Identify areas of potential and actual environmental noncompliance that need to be addressed before they are identified by a regulatory agency.
- Establish FWS-wide standards for environmental compliance audits as a means of ensuring the Service's observance of all applicable environmental laws and regulations.
- Assure Regional Directors and environmental program managers that environmental programs are effectively addressing environmental problems that could:
  a. impact FWS mission effectiveness
  b. jeopardize the health of Service personnel or the general public
  c. significantly degrade the environment
  d. expose the FWS to avoidable financial liabilities as a result of noncompliance with environmental requirements
  e. erode public confidence in the FWS and the U.S. Department of the Interior (DOI)
  f. expose individuals to civil and criminal liability.
- Secure information that will permit FWS Managers to anticipate and prevent future environmental problems.
- Provide data for use in identifying, validating, prioritizing, programming, and budgeting environmental requirements.

Scope of the Audit

This audit will cover FWS facilities and activities. It will address the facilities or activities of tenants occupying FWS property.

The audit incorporates both a review of paperwork and a physical review of paperwork and structures.

Topics for audit

Air Emissions Management
Drinking Water Management
Hazardous Materials Management
Hazardous Waste Management
Pesticide Management
Petroleum, Oil, and Lubricant (POL) Management
Solid Waste Management
Special Pollutants Management (includes asbestos, PCBs, radon, and noise)
Underground Storage Tank (UST) Management
Wastewater Management

Audit Results

Each site audit will result in the creation of "finding sheets" which document both the positive and the negative situations identified at the facility. A copy of all finding sheets will be left at the assessed facility.

Scoring of Findings

Significant: A problem categorized as significant requires immediate attention. It poses, or has a high likelihood to pose, a direct and immediate threat to human health, safety, the environment, or the facility's mission. A leaking PCB transformer that is located next to a dining facility, for example, would likely be a significant deficiency.

Major: A major deficiency requires action, but not necessarily immediate action. Major deficiencies may pose a threat to human health, safety, or the environment. Any immediate threat, however, must be categorized as significant.

Minor: Minor deficiencies are usually administrative in nature, even though those findings might possibly result in a notice of violation. This category may also include temporary or occasional instances of noncompliance.

Management Practice: MP items are those for which there is no specific regulatory requirement.

Required Practice: RP items are those derived from FWS/DOI policy. While not a Federal or state regulatory requirement, they are still required practices.

A finding may be positive or negative. A positive finding is for a job, activity, or person who has gone above and beyond the regulatory requirements. A negative finding is when there is an issue of noncompliance or a poor management practice.

After the Audit

1. The audit team will send a copy of the Draft findings report to the regional representative who will forward it on to the facility and another copy is sent to the EFC.

2. Upon receipt of the report, the facility is required to respond to each of the regulatory and/or RP findings. A response can be as simple as "situation corrected on 30 June 1994," "work order request submitted on 30 May 1994 for construction of cement pad." The facility is required to develop a corrective action for every regulatory and RP finding. The facility is not required to respond to the MP findings in Section Four of the report but it is strongly urged to do so. If the facility has received a "Significant" finding, this finding will be forwarded to the Directorate level. Replies to the findings will be sent to the Region within 60 days after receipt of the Draft Findings Report. If a reply/corrective action is not appropriate to the finding, the audit team will contact the Region who in turn will contact the facility and develop an alternative plan.

3. The audit team will produce a final report. The team leader will send one copy of the final report to the Region, the facility, and the EFC.

Appendix F
FINDING SUMMARY

Facility Name: NWR XYZ **Handbook Edition Date:** July 1998

Section: Air ( ) Drinking Water ( ) Haz Mat ( ) Haz Waste (X) **Question Number:** HW.30.1
Pest ( ) POL ( ) Solid ( ) SPM ( ) UST ( ) Wstwtr ( )

Location: Hazardous Waste Accumulation Point **Finding:** Pos ( ) Neg (X)

FINDING CATEGORY: Significant ( ) Major (X) Minor ( ) MP ( ) RP ( )

Citation or Regulation: 40 CFR 262.24(d)(2) and 265.171 **Sect Code/Univ Code:** HW2/9Z

Is this a repeat finding (NOV, etc.)? NO

CONDITION (What did you find?)
Five of the eight drums stored in the hazardous waste shed are rusted and bulging. These drums were not noted on the weekly inspection log as being deficient. The drums were situated behind 4 other drums of material and not easily accessible. The storage shed does not have an impervious floor and therefore any spill/leak would be released to the environment. There are three, 55-gal drums of waste antifreeze, two, 55 gal drums of POL-contaminated soil, and three, 25-gal drums of used solvent.

SUGGESTED SOLUTION(S):
Put the damaged drums into overpacks and determine why such a large volume of waste is being stored.

COMMENTS:
Refuge manager ordered overpack drums before departure of the audit team.

ESTIMATED COST OF AUDIT CORRECTION: _____ **(see attached form)**

PREPARED BY: Tina M. Hurt **DATE:** August 16, 1999

Explanation of Finding Categories

Deficiencies noted on the Finding Summary are rated as follows:

Significant: A problem categorized as significant requires immediate attention. It poses, or has a high likelihood to pose, a direct and immediate threat to human health, safety, the environment, or the facilities' mission. A leaking PCB Transformer that is located next to a dining facility, for example, would likely be a significant deficiency.

Major: A major deficiency requires action, but not necessarily immediate action. Major deficiencies may pose a threat to human health, safety, or the environment. Any immediate threat, however, must be categorized as significant.

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Required Practice: RP items are those derived from FWS policy. While not a Federal or state regulatory requirements, they are still required practices.

A finding may be positive or negative. A positive finding is for a job, activity, or person who has gone above and beyond the regulatory requirements for protecting the environment. A negative finding is where there is an issue of noncompliance or a poor management practice.

FINDING SUMMARY

Facility Name:_____ **Handbook Edition Date:** _____

Section: Air ( ) Drinking Water ( ) Haz Mat ( ) Haz Waste ( ) **Question Number:** _____
Pest ( ) POL ( ) Solid ( ) .SPM ( ) UST ( ) Waste Water ( )

Location: _____ **Finding:** Pos ( ) Neg ( )

FINDING CATEGORY: Significant ( ) Major ( ) Minor ( ) MP ( ) RP ( )

Citation or Regulation: _____ **Sect Code/Univ Code:** _____
_____

Is this a repeat finding (NOV, etc.)? _____

CONDITION (What did you find?)

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SUGGESTED SOLUTION(S):

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COMMENTS:

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_____

ESTIMATED COST OF AUDIT CORRECTION: _____**(see attached form)**

PREPARED BY: _____ **DATE:** _____

Explanation of Finding Categories

Deficiencies noted on the Finding Summary are rated as follows:

Significant: A problem categorized as significant requires immediate attention. It poses, or has a high likelihood to pose, a direct and immediate threat to human health, safety, the environment, or the facilities' mission. A leaking PCB Transformer that is located next to a dining facility, for example, would likely be a significant deficiency.

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Management Practice: MP items are those for which there is no specific regulatory requirement.

Required Practice: RP items are those derived from FWS policy. While not a Federal or state regulatory requirements, they are still required practices.

A finding may be positive or negative. A positive finding is for a job, activity, or person who has gone above and beyond the regulatory requirements for protecting the environment. A negative finding is where there is an issue of noncompliance or a poor management practice.

FWS Environmental Compliance Audit Findings Root Causes

Purpose

The purpose for using root cause codes is to better enable the EFC to track trends in noncompliance.

Universal Codes (Pick a maximum of two)			
Code		**Code**	
1Z	Labels/Markings	7Z	Certifications/Licenses
2Z	Recordkeeping	8Z	Training
3Z	Reports	9Z	Operational Practice
4Z	Plans	10Z	Inadequate Facility
5Z	Surveys/Inventories/Testing	11Z	Spills/Leaks
6Z	Permits	12Z	Other

Section Codes (Pick a maximum of two)			
Code		**Code**	
	Air Emissions Management		POL Management
A1	Fuel Burners	PO1	Drum storage
A2	Incinerators	PO2	ASTs
A3	Open Burning	PO3	Pipelines
A4	CFCs/Halons	PO4	Used Oil
A5	Fugitive Emissions	PO5	Other
A6	Other		
	Drinking Water Management		Solid Waste Management
D1	Public Water Systems	SW1	Operating Open Dump
D2	Community Water Systems	SW2	Old Dump/landfill site
D3	Noncommunity Water Systems	SW3	Operating Landfill
D4	Wells	SW4	Receptacles
D5	State Classifications other than Federal Classifications	SW5	Recycling
		SW6	Medical Waste
D6	Other	SW7	Regulated Materials
		SW8	Other
	Hazardous Materials Management		Special Pollutants
HM1	General Hazardous Materials	SP1	PCB Transformers
HM2	Laboratories	SP2	PCB Items
HM3	EPCRA	SP3	Demolition/Renovation: Asbestos
HM4	Flammables/Combustibles		
HM5	Compressed gases	SP4	Disposal
HM6	Other	SP5	Radon
		SP6	Other
	Hazardous Waste Management		Underground Storage Tanks
HW1	CESQG	U1	Substandard tanks
HW2	SQG	U2	Upgraded tanks
HW3	Generator	U3	Closed Tanks
HW4	Uncharacterized Waste	U4	Release Detection
HW5	Satellite Accumulation Points	U5	Other
HW6	TSDF		
HW7	Other		
	Pesticide Management		Wastewater Management
P1	Applications	W1	Discharge to Treatment Works
P2	Applicators		
P3	Restricted Use Pesticides	W2	Treatment Works operation
P4	Storage	W3	Stormwater Discharge
P5	Mixing/Preparation	W4	Oil/Water Separators
P6	Other	W5	Washracks
		W6	Individual Sewage Systems
		W7	Other

Appendix G

SUMMARY OF FINDINGS						
Topic	**Significant**	**Major**	**Minor**	**Negative MPs**	**Negative RPs**	**Positive Findings**
Air Emissions Management						
Drinking Water Management						
Hazardous Materials Management						
Hazardous Waste Management						
Pesticide Management						
Petroleum, Oil, and Lubricant (POL) Management						
Solid Waste Management						
Special Pollutants Management (PCBs, Asbestos, Radon, and Noise)						
Underground Storage Tank (UST) Management						
Wastewater Management						
TOTALS						

Appendix H

Acronyms and Abbreviations

AAR	annual application rate
ACM	asbestos-containing material
ANSI	American National Standards Institute
API	American Petroleum Institute
AQCR	Air Quality Control Region
ARI	Air-Conditioning and Refrigeration Institute
ASME	American Society of Mechanical Engineers
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
BAT	best available technology
Btu	British thermal unit
C	compliance
CAA	*Clean Air Act*
CAMU	Corrective Action Management Unit
CAP	Corrective Action Plan
CAS	Chemical Abstract Service
CDL	Commercial Drivers License
CEMS	Continuous Emissions Monitoring System
CEQ	Council on Environmental Quality
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act*
CESQG	conditionally exempt small quantity generator
CFC	chlorofluorocarbons
CFR	Code of Federal Regulations
CT	residual disinfectant concentration (C in CT calculation)
CWA	*Clean Water Act*
DHMIR	detailed hazardous materials incident report
DIY	do-it-yourself
DOI	Department of the Interior
DOT	Department of Transportation
EE/CA	engineering evaluation/cost analysis
EIS	environmental impact statement
EO	Executive Order
EPA	Environmental Protection Agency
EPCRA	*Emergency Planning and Community Right-to-Know Act*
ESA	*Endangered Species Act*
FFCA	*Federal Facilities Compliance Act*
FIFRA	*Federal Insecticide, Fungicide, and Rodenticide Act*
FNSI	finding of no significant impact
FOTW	Federally owned treatment works
FR	Federal Register
FUDS	formally used defense sites
FWCA	*Fish and Wildlife Conservation Act*
FWS	Fish and Wildlife Service
FY	fiscal year

GOTP	gamma glutamyl transpeptidase
HCFC	hyrdrogenated chlorofluorocarbons
HCL	hydrochloric acid
HOC	halogenated organic compounds
HPC	heterotrophic plate count
HTRW	hazardous, toxic, and radioactive waste
ID	identification
IOPP	International Oil Pollution Prevention
LDR	land disposal restriction
LPG	liquid petroleum gas
MBtu	Million British thermal units
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MDL	maximum detection level
MOU	memorandum of understanding
MP	management practice
MPN	most probable number
MSDS	material safety data sheet
MSWLF	municipal solid waste landfill
MVAC	motor vehicle air conditioning
MWC	municipal waste combustor
NA	not applicable
NAAQS	*National Ambient Air Quality Standards*
NACE	National Association of Corrosion Engineers
NEPA	*National Environmental Policy Act*
NFPA	National Fire Protection Association
NHPA	*National Historic Preservation Act*
NIOSH	National Institute of Occupational Safety and Health
NLS	noxious liquid substance
NOI	notice of intent
NOV	notice of violation
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
NSPS	new source performance standards
NTNC	nontransient noncommunity
O&M	operations and maintenance
ODA	*Ocean Dumping Act*
OHSPC	Oil and Hazardous Substances Pollution Contingency Plan
OMB	Office of Management and Budget
OPA	*Oil Pollution Act*
OSC	On-Scene Coordinator
OSHA	*Occupational Safety and Health Act*
PCB	polychlorinated biphenyl
PL	Public Law
POC	point of contact
POHC	principle organic hazardous constituent
POL	petroleum, oil, and lubricant
POTW	publicly owned treatment works
PSD	prevention of significant deterioration
PSES	pretreatment standards for existing sources
PSNS	pretreatment standards for new indirect sources

QA	quality assurance
RACM	regulated asbestos-containing material
RCRA	*Resource Conservation and Recovery Act*
RMA	requires management action
RQ	reportable quantity
RSPA	Research and Special Programs Administration
SARA	*Superfund Amendments and Reauthorization Act*
SDWA	*Safe Drinking Water Act*
SGOT	serum glutamic oxaloacetic transaminase
SGPT	serum glutamic pyuvic transaminase
SIP	State Implementation Plan
SOI	Secretary of the Interior
SOP	standard operating procedure
SOUR	specific oxygen uptake rate
SPCC	Spill Prevention Control and Countermeasure Plan
SPDES	State Pollution Discharge Elimination System
SQG	small quantity generator
STP	sewage treatment plant
SWMU	solid waste management unit
TCLP	toxicity characteristics leaching procedure
THM	trihalomethanes
TNT	ammonia nitrate explosive
TPQ	threshold planning quantity
TRI	Toxic Release Inventory
TSCA	*Toxic Substances Control Act*
TSDF	treatment, storage, or disposal facility
TSS	total suspended solid
TTHM	total trihalomethanes
TTO	total toxic organics
TU	temporary unit
UIC	underground injection control
UL	Underwriter's Laboratory
USACERL	U.S. Army Construction Engineering Research Laboratories
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VHAP	volatile hazardous air pollutant
VOC	volatile organic compound
VOL	volatile organic liquid

Commonly Used Abbreviations

bbl	barrel	mg	microgram
C	Celsius	mm	micrometer
cm	centimeter	min	minute
cm^2	square centimeter	MJ	Megajoule
F	Fahrenheit	mo	month
ft	foot	mm	millimeter
ft^2	square feet	mrem	millirem
ft^3	cubic feet	MW	Megawatt
g	gram	ng	nanogram
gal	gallon	NTU	nephelometric turbidity unit
gJ	gigajoule	oz	ounce
h	hour	pCi	picoCurie
hp	horsepower	ppm (v/w)	part per million (by volume/ weight)
in.	inch	psi	pound per square inch
J	Joule	psia	pounds per square inch absolute
kg	kilogram	psig	pounds per square inch gauge
km	kilometer	s	second
kPa	kilopascals	scf	standard cubic foot
L	liter	scm	standard cubic meter
lb	pound	V	volt
m	meter	yd	yard
m^3	cubic meter	yd^2	square yard
mg	milligram	yr	year
mi	mile		

Chemicals

CO	carbon monoxide	NO_2	nitrogen dioxide
CO_2	carbon dioxide	NO_x	nitrogen oxide
Hg	mercury	SO_2	sulfur dioxide

Appendix I

USEPA Contacts, Hotlines, and FWS Regional Contacts
[Revised June 1998]

(NOTE: The USEPA WWW site is www.epa.gov)

Region 1 (CT, ME, MA, NH, RI, VT) Environmental Protection Agency 1 Congress St., 11th Floor Boston, MA 02203 617-565-3715	Region 6 (AK, LA, NM, OK, TX) Environmental Protection Agency 1445 Ross Ave, Suite 1200 Dallas, TX 75202 214-665-2200
Region 2 (NJ, NY, Puerto Rico, Virgin Islands) Environmental Protection Agency 290 Broadway New York, NY 10007 212-637-3000	Region 7 (IA, KS, MO, NE) Environmental Protection Agency 726 Minnesota Ave Kansas City, KS 66401 913-551-7003
Region 3 (DC, DE, MD, PA, VA, WV) Environmental Protection Agency 841 Chestnut St. Philadelphia, PA 19107 215-566-2950	Region 8 (CO, MT, ND, SD, UT, WY) Environmental Protection Agency 999 18th St, Suite 500 Denver, CO 80202-2466 800-227-8917
Region 4 (AL, FL, GA, KY, MS, NC, SC, TN) Environmental Protection Agency Atlanta Federal Center 61 Forsyth St, SW. Atlanta, GA 30303-3104 404-562-9900	Region 9 (AZ, CA, HI, NV, the Pacific Islands subject to U.S. law) Environmental Protection Agency 75 Hawthorne St. San Francisco, CA 94105 415-744-1500
Region 5 (IL, IN, MI, MN, OH, WI) Environmental Protection Agency 77 W. Jackson Chicago, IL 60604 312-353-2000	Region 10 (AK, ID, OR, WA) Environmental Protection Agency 1200 Sixth Ave Seattle, WA 98101 206-553-1200

ENVIRONMENTAL INFORMATION HOTLINES

Air Risk Hotline 919-541-0888

Information on health, exposure, and risk assessment with regard to toxic air pollutants

Bureau of Explosives Hotline 202-639-2222

Offers assistance in hazardous materials incidents involving railroads and is often contacted through CHEMTREC.

Cancer Information Service Hotline 800-422-6237

Provides information on cancer risk and referrals to proper sources for local support services.

Center for Hazardous Materials (CHMR) 800-334-2467

Information on hazardous waste regulations, minimization, pollution prevention. Distributes related publications/referrals.

CHEMTREC Hotline 800-424-9300

The Chemical Transportation Emergency Center will identify unknown chemicals, advise on response methods and procedures for chemicals and situations, provide help in contacting shippers/ carriers/manufacturers/product response teams.

Consumer Product Safety Commission 800-638-2772

Information on consumer safety and guidelines on what to do if you come in contact with formaldehyde, asbestos, lime, and air pollutants. Also provides product recall information.

Control Technology Center for Air Toxics 919-541-0800

Provides information to state and local pollution control agencies or sources of emissions of air toxics.

Department of Transportation Hotline 202-366-4488

Information assistance pertaining to Federal regulations for transportation of hazardous materials, Code of Federal Regulations (CFR) 49.

Emergency Plan and Community Right-To-Know Hotline, EPA 800-535-0202

Regulatory, policy, and technical assistance related to EPCRA requirements.

EPA Control Technology Center 919-541-0800

General assistance and information on the Clean Air Act and its requirements and air pollution control technologies.

Environmental Defense Fund Recycling Hotline 212-505-2100

Recycling information and locations.

Environmental Protection Agency 900-245-4505

Information for vendors treating groundwater, soil, sludge, sediments, and solid waste.

GSA Shelf-Life Hotline 209-946-6333

Provides federal customers information on shelf-life extension.

Hazardous Materials and Oil Spills, USEPA 800-424-8802

National Response Center in the advent of hazardous material spills

Indoor air Quality Information Clearinghouse 800-438-4318

Information on indoor air pollutants, sources, health effects, testing, measuring and control.

National Pesticide Telecommunications Network Hotline 800-858-7378

Information regarding all aspects of pesticide handling.

Plastics Recyclers Information Line 800-243-5790

Information regarding plastic recycling locations according to area.

Poison Control Center (National Capital) 202-626-3333

Provides info on exposure to chemicals, poisons, or drugs.

Public Information Hotline, USEPA 202-260-2080

Will answer inquiries from the public about USEPA and offers a variety of general, nontechnical information materials.

RCRA/Superfund/EPCRA Hotline 800-424-9346

Answers questions about EPA programs under RCRA, Superfund, and EPCRA, and responds to requests for relevant documents

RCRA/Superfund (OUST Hotline) 800-424-9346

Information on RCRA regulations and policies. Referrals for obtaining related documents RCRA, USTs, Superfund/CERCLA. Pollution Prevention.

Safe Drinking Water Hotline 800-426-4791

Information on policy and regulations regarding public water supply programs.

Solid Waste Assistance Program (SWAP) 800-677-9424

Source reduction, recycling, composting, planning, education/training, public participation, legislation/regulation, waste combustion, collection, transfer and disposal, landfill gas, and special wastes.

Stratosphere Ozone Hotline, USEPA 800-296-1996

General information on stratospheric ozone depletion and its protection. Consultation on ozone protection regulations and requirements under the CAA 1990 amendments.

Superfund Technical Information 800-346-5009

Superfund message center allowing caller to leave messages.

Toxic Substances (Asbestos) 800-462-6706

Information on funding for asbestos cleanup projects.

Toxic Substance Control Act (TSCA) Assistance Information Service 202-554-1404

Information on TSCA regulations in addition to technical information and referral.

Used Filter Hotline 919-549-4800

Sponsored by the Motor and Equipment Manufacturers Association. Provides information on proper filter disposal.

Waste Reduction Assistance Program OER (FL) 904-488-0300

Advice, information, and counseling services for pollution prevention.

Wetlands Protection Hotline, USEPA 800-832-7828

Information regarding values of wetlands and efforts for wetlands protection.

Whistle Blower Hotline, USEPA 800-424-4000

Allows for reporting of fraud, waste, and abuse in USEPA programs.

FWS Regional Environmental Compliance Coordinators (ECC)

Region/Name	Address	Telephone	Fax
Region 1 - Tom Smiley	Regional Engineering 911 NE 11th Ave. Portland, OR 97232-4181	503-231-6145	503-231-6847
Region 2 - Bernard Freeman	Division of Engineering 123 4th St. SW, Room 152 Albuquerque, NM 87102	505-248-7956	505-248-7950
Region 3 - Patrick McDermott	Regional Engineering 1 Federal Drive Fort Snelling, MN 55111-4056	612-713-5255	612-713-5291
Region 4 - Jim Poje	Regional Engineering 1875 Century Blvd., Ste 306 Atlanta, GA 30345	404-670-4113	404-679-4121
Region 5 - Dave Washburn Ed Kaiser	Regional Engineering 300 Westgate Center Dr. Hadley, MA 01035-9589	413-253-8296 413-253-8312	413-253-8451 413-253-8451
Region 6 - Kevin Jensen	Safety and Occupational Health PO Box 25486 Denver Federal Center Denver, CO 80225-0486	303-236-8116	303-236-6958
Region 7 - Charles Grant	Regional Engineering 1011 East Tudor Rd Anchorage, AL 99503	907-786-3506	907-786-3370

SECTION 1

AIR EMISSIONS MANAGEMENT

U.S. ECAH, September 1999

A. Applicability

This section includes regulations, responsibilities, and compliance requirements associated with air pollution emissions from stationary and mobile sources. The significant types and sources of air pollution emissions include:

- Particulates, SO_2, NO_x, VOC, hazardous air pollutants (HAP), and CO from fuel burning at steam and hot water generation plants and boilers.
- Particulates and toxic air emissions from the operation of hazardous waste, general waste, classified material, and medical, pathological, and/or infectious waste incinerators.
- Particulates, CO, metals, and toxic air pollutant emissions from open burning and open detonation operations.
- The emission of volatile organic compound (VOC) vapors from the storage and transfer of certain petroleum fuels and chemicals (solvents), and the operation of degreasers and other processes (paint stripping and metal finishing) that use solvents.
- The emission of CO from vehicles and equipment operated on the facility.
- Fugitive particulate emissions from training activities and construction/demolition operations.

Most facilities have air emissions sources in one or more of these categories. Therefore, this section is applicable to some extent at all facilities.

B. Federal Legislation

- *The Clean Air Act* Amendments of 1990 (CAAA90). This act, Public Law (PL) 101-549 (42 U.S. Code (USC) 7401-7671q), is currently the Federal legislation regulating the prevention and control of air pollution. It is composed of seven major titles that address various aspects of the national air pollution control program:
    1. Title I describes air pollution control requirements for geographic areas in the United States with respect to the National Ambient Air Quality Standards (NAAQS).
    2. Title II deals mostly with revised tailpipe emission standards for motor vehicles. These requirements compel automobile manufacturers to improve design standards to limit CO, hydrocarbon, and NO_x emissions. Oxygenated gasoline will be required in cities with the worst ozone and CO nonattainment. Reformulated gasoline and gasoline with reduced Reid vapor pressure is used in ozone nonattainment areas.

3. Title III potentially contains the most costly requirement of the CAAA90. The major elements of Title III deal with hazardous air pollutants through control of routine emissions, and contingency planning for accidental releases.
4. Title IV addresses acid deposition control and applies only to commercial utilities that produce electricity for sale.
5. Title V outlines the requirement of having states issue Federally enforceable operating permits to major stationary sources. The permits are designed to enhance the ability of the USEPA, state regulatory agencies, and private citizens to enforce the requirements of the CAAA90. Permits will also be used to specify operation and control requirements for stationary sources.
6. Title VI limits the emissions of chlorofluorocarbons (CFC), halons, and other halogenated chemicals that contribute to the destruction of stratospheric ozone. These requirements closely follow the control strategies recommended in June 1990 by the second meeting of parties to the Montreal Protocol.
7. Title VII describes civil and criminal penalties that may be imposed for violation of new and existing air pollution control requirements. This title also gives authority to the USEPA to issue field citations for many types of violations.

The Department of Justice, Office of Legal Counsel decision issued 16 July 1997 stipulates the USEPA is administratively authorized under the CAA to assess civil penalties against Federal agencies for violations of the CAA. States on the other hand, do not have the authority to assess civil penalties against Federal agencies for violations of the CAA **[Added June 1998].**

- Federal regulations used to develop the checklist include:

  - 40 CFR 60, *Standards of Performance for New Stationary Sources*.
  - 40 CFR 61, *National Emission Standards for Hazardous Air Pollutants*.
  - 40 CFR 80, *Regulation of Fuels and Fuel Additives*.
  - 40 CFR 82, *Protection of Stratospheric Ozone*.

C. State/Local Regulations

The primary mechanisms regulating air pollutant emissions are the state or air quality control region (AQCR) regulations. These regulations will normally follow the Federal guidelines for state programs and will have many similar features. However, depending on the type and degree of air pollutant problems within the state/region, the individual regulations will vary. As an example, ozone problems are widespread in California and, therefore, the individual AQCRs in that state have stringent VOC emission requirements. The state of North Dakota has no such problem and, therefore, has fewer and less stringent VOC regulations.

New source performance standards (NSPSs) are established for particular pollutants in industrial categories based upon adequately demonstrated control technology. A permit is normally required for new, expanded, or modified sources of air pollutants. These permitted sources could include incinerators, boilers, and open burning activities.

Some state regulations apply directly to some facilities and operations without requiring a permit. At a minimum, state regulations should be reviewed for the following activities:

1. fugitive dust emissions
2. control of particulate emissions from the transportation of refuse or materials in open vehicles
3. certification requirements for boiler operators
4. emissions and emission control requirements for the operation of existing fossil fuel-fired steam generators

5. open burning
6. vehicle exhaust emissions testing
7. spray painting of vehicles, buildings, or furniture
8. certification of vehicles transporting VOC liquids
9. paving of roads and parking lots
10. toxic air pollutants
11. operation of cold cleaners, degreasers, and open top vapor degreasers
12. vapor control requirements for fuel pumps.

D. FWS/DOI Manuals

- 561 FW 2, *Compliance Requirements, Clean Air Act (CAA)*. This chapter, dated 22 March 1995 provides the guidance necessary to ensure FWS compliance with the CAA.

E. Key Compliance Requirements

- Gasoline Dispensing - Leaded gasoline shall not be introduced into any motor vehicle that is labeled UNLEADED GASOLINE ONLY, or that is equipped with a gasoline tank filler inlet designed for introduction of unleaded gasoline. Fuel pumps are required to display signs stating the type of fuel in each pump and that only unleaded gas can be introduced into labeled vehicles. The nozzles of the pumps are required to be properly sized. Depending on whether the oxygenated gas is still in the control period, or the area has an oxygenated gasoline program with a credit program, pumps dispensing oxygenated gasoline are required to be labeled. During 1992 and later high ozone seasons and regulatory control periods, gasoline shall not be sold, offered for sale, imported, dispensed, supplied, or transported that exceeds Reid vapor pressure standards in 82. No low sulfur diesel fuel shall be distributed, transported, offered for sale, or dispensed for use in motor vehicles unless it is free of the dye 1,4-dialkylamino-antraquinone and has a cetane index of at least 40, or a maximum aromatic content of 35 volume percent and a sulfur percentage of less than 0.05 percent (40 CFR 80.22(a), 80.22(d), 80.22(e), 80.24(a)(1), 80.27(a)(2), 80.35, 80.80(d), and 80.29(a)).

- Chlorofluorocarbons (CFCs) and Halons - To protect the ozone layer, no person repairing or servicing motor vehicles for payment can service a motor vehicle air-conditioner (MVAC) in any way that affects the refrigerant unless they have been trained and certified and are using approved equipment. Additionally, persons who maintain, service, or repair appliances, except MVACs, and persons who dispose of appliances, except for small appliances, room air conditioners, MVACs, and MVAC-like appliances are required to be certified through an approved technician certification program. As of 15 November 1992, no Class I or Class II substances suitable for use in motor vehicles as a refrigerant can be sold or distributed in any container that is less than 20 lb to any person unless that person is trained and certified. Facilities that sell Class I or Class II substances suitable for use as a refrigerant in containers of less than 20 lb are required to display a sign with certain wording. The servicing of appliances containing CFCs and halons is required to be done in a manner to prevent emissions (40 CFR 82.34(a), 82.34(b), 82.42(a) through 82.42(c), 80.150 through 80.166, and 82.270) **[Revised March 1998]**.

- Medical Waste Incinerators - Hospital/medical/infectious waste incinerators (HMIWI) are required to limit discharges of particulates, CO, dioxins/furans, hydrogen chloride, SO_2, NO_x, lead, cadmium, and mercury. Emissions limitations will be performed by the use of appropriate filters and scrubbers and the implementation of extensive monitoring and operating parameters. Existing HMIWIs will be required to comply with the new regulations as USEPA approves state-developed plans. The deadline for compliance will be no later than September 2002. The definition for medical infectious waste as related to these incinerators includes "any waste

generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto" (40 CFR 60.50c through 60.58c) **[December 1997]**.

- Degreasing Operations - Batch cold cleaning machines, batch vapor cleaning machines, and in-line cleaning machines have to have tightly fitting covers and assorted emission control devices to prevent excess emissions. Operators of these types of units are also required to submit notifications, operating reports, exceedance reports, and solvent use reports. These regulations specifically apply to each individual batch vapor, in-line vapor, in-line cold, and batch cold solvent cleaning machine that uses any solvent containing methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, or chloroform or any combination of these halogenated HAP solvents, in total concentration greater than 5 percent by weight, as a cleaning and/or drying agent.

- Recordkeeping - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

F. Key Compliance Definitions

- *Air Blanket* - the layer of air inside the solvent cleaning machine freeboard located above the solvent/air interface. The centerline of the air blanket is equidistant between the sides of the machine (40 CFR 63.461).

- *Annual Capacity Factor* - the ratio between the actual heat input to a steam generating unit from an individual fuel or combustion of fuels during a period of 12 consecutive calendar months and the potential heat input to the steam generating unit from all fuels, had the steam generating unit been operated for 8700 h during that 12-mo period at the maximum design heat input capacity (40 CFR 60.41c).

- *Appliance* - any device which contains and uses a Class I or Class II substance as a refrigerant and which is used for household or commercial purposes, including any air conditioner, refrigerator, chiller, or freezer (40 CFR 82.152).

- *Apprentice* - any person who is currently registered as an apprentice in service, maintenance, repair, or disposal of appliances with the U.S. Department of Labor's Bureau of Apprenticeship and Training (or a State Apprenticeship Council recognized by the Bureau of Apprenticeship and Training). If more than 2 yr have elapsed since the person first registered as an apprentice, the person shall not be recognized as an apprentice (40 CFR 82.152).

- *Approved Equipment Testing Organization* - any organization which has applied for and received approval from the Administrator pursuant to 40 CFR 82.160 (40 CFR 82.152).

- *Automated Parts Handling System* - a mechanical device that carries all parts and parts baskets at a controlled speed from the initial loading of soiled or wet parts through the removal of the cleaned or dried parts. Automated parts handling systems include, but are not limited to, hoists and conveyors (40 CFR 63.461).

- *Batch Cleaning Machine* - a solvent cleaning machine in which individual parts or a set of parts move through the entire cleaning cycle before new parts are introduced into the solvent cleaning machine. An open top vapor cleaning machine is a type of batch cleaning machine. A solvent cleaning machine, such as a ferris wheel or a cross rod degreaser, that cleans multiple batch loads simultaneously and is manually loaded is a batch cleaning machine (40 CFR 63.461).

- *Batch HMIWI* - an HMIWI that is designed such that neither waste charging nor ash removal can occur during combustion (40 CFR 60.51c) **[December 1997]**.

- *Biologicals* - preparations made from living organisms and their products, including vaccines, cultures, etc., intended for use in diagnosing, immunizing, or treating humans or animals or in research pertaining thereto (40 CFR 60.51c) **[December 1997]**.

- *Blood Products* - any product derived from human blood, including but not limited to, blood plasma, platelets, red or white blood corpuscles, and other derived licensed products, such as interferon, etc. (40 CFR 60.51c) **[December 1997]**.

- *Body Fluids* - liquid emanating or derived from humans and limited to blood; dialysate; amniotic, cerebrospinal, synovial, pleural, peritoneal and pericardial fluids; and semen and vaginal secretions (40 CFR 60.51c) **[December 1997]**.

- *Bypass Stack* - a device used for discharging combustion gases to avoid severe damage to the air pollution control device or other equipment (40 CFR 60.51c) **[December 1997]**.

- *Carbon Adsorber* - a bed of activated carbon into which an air solvent gas vapor stream is routed and which adsorbs the solvent on the carbon (40 CFR 63.461).

- *Cartridge Filter* - a discrete filter unit containing both filter paper and activated carbon that traps and removes contaminants from petroleum solvent, together with the piping and ductwork used in installing this device (40 CFR 60.621).

- *Certified Refrigerant Recovery or Recycling Equipment* - equipment certified by an approved equipment testing organization to meet the standards in 40 CFR 82.158(b) or (d), equipment certified pursuant to 40 CFR 82.36(a), or equipment manufactured before 15 November 1993 that meets the standards in 40 CFR 82.158(c), (e), or (g) (40 CFR 82.152).

- *Chemotherapeutic Waste* - waste material resulting from the production or use of antineoplastic agents used for the purpose of stopping or reversing the growth of malignant cells (40 CFR 60.51c) **[December 1997]**.

- *Clean Liquid Solvent* - fresh, unused solvent, recycled solvent, or used solvent that has been cleaned of soils (e.g., skimmed of oils or sludge and strained of metal ships) (40 CFR 63.461).

- *Cleaning Capacity* - for a cleaning machine without a solvent/air interface, the maximum volume of parts that can be cleaned at one time. In most cases, the cleaning capacity is equal to the volume (length time width time height) of the cleaning chamber (40 CFR 63.461).

- *Closed-Vent System* - a system that is not open to the atmosphere and is composed of piping, connections, and, if necessary, flow inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device (40 CFR 61.241).

- *Cold Cleaning Machine* - any device or piece of equipment that contains and/or uses liquid solvent, into which parts are placed to remove soils from the surface of the parts or to dry the parts. Cleaning machines that contain and use heated, nonboiling, solvent to clean the parts are classified as cold cleaning machine (40 CFR 63.461).

- *Commercial Refrigeration* - for the purposes of 40 CFR 82.156(i), the refrigeration appliances utilized in the retail food and cold storage warehouse sectors. Retail food includes the refrigeration equipment found in supermarkets, convenience stores, restaurants, and other food service establishments. Cold storage includes the equipment used to store meat, produce, dairy

products, and other perishable goods. All of the equipment contains large refrigerant charges, typically over 75 lb (40 CFR 82.152).

- *Continuous Cleaning Machine* - see In-Line Cleaning Machine.

- *Continuous HMIWI* - an HMIWI that is designed to allow waste charging and ash removal during combustion (40 CFR 60.51c) **[December 1997]**.

- *Critical Component* - for the purpose of 82.156(i), a component without which industrial process refrigeration equipment will not function, will be unsafe in its intended environment, and/or will be subject to failures that would cause the industrial process served by the refrigeration appliance to be unsafe (40 CFR 82.152).

- *Cross Rod Solvent Cleaning Machine* - a batch solvent cleaning machine in which parts baskets are suspended from "cross-rods" as they are moved through the machine. In a cross rod cleaning machine, parts are loaded semi-continuously, and enter and exit the machine from a single portal (40 CFR 63.431).

- *Custom Built* - for the purpose of 82.156(i), the equipment or any of the critical components cannot be purchased and/or installed without being uniquely designed, fabricated, and/or assembled to satisfy a specific set of industrial process conditions (40 CFR 82.152).

- *Designated Volatility Attainment Area* - an area not designated as being in nonattainment with the NAAQS for ozone (40 CFR 80.2).

- *Designated Volatility Nonattainment Area* - any area designated as being in nonattainment with the National Ambient Air Quality Standard (NAAQS) for ozone pursuant to rule making under Section 107(d)(4)(A)(ii) of the CAAA90 (40 CFR 80.2).

- *Diesel Fuel* - any fuel sold in any state and suitable for use in diesel motor vehicles and diesel motor vehicle engines, and which is commonly or commercially known or sold as diesel fuel (40 CFR 80.2).

- *Dioxins/Furans* - the combined emissions of tetra- through octa-chlorinated dibenzo-para-dioxins and dibenzofurans, as measured by EPA Reference Method 23 (40 CFR 60.51c) **[December 1997]**.

- *Disposal* - the process leading to and including (40 CFR 82.152):
    1. the discharge, deposit, dumping, or placing of any discarded appliance into or on any land or water
    2. the disassembly of any appliance for discharge, deposit, dumping, or placing of its discarded component parts into or on any land or water
    3. the disassembly of an appliance for reuse of its component parts.

- *Disposal of Halon* - the process leading to and including discarding of halon from halon-containing equipment (40 CFR 82.260) **[Added March 1998]**.

- *Dry Scrubber* - an add-on air pollution control system that injects dry alkaline sorbent (dry injection) or sprays an alkaline sorbent (spray dryer) to react with and neutralize acid gases in the HMIWI exhaust stream forming a dry powder material (40 CFR 60.51c) **[December 1997]**.

- *Dwell* - the technique of holding parts within the freeboard area but above the vapor zone of the solvent cleaning machine. Dwell occurs after cleaning to allow solvent to drain from the parts or parts baskets back into the solvent cleaning machine (40 CFR 63.461).

- *Disposal of Halon-containing Equipment* - the process leading to and including (40 CFR 82.260) **[Added March 1998]:**
    1. The discharge, deposit, dumping, or placing of any discarded halon-containing equipment into or on any land or water
    2. The disassembly of any halon-containing equipment for discharge, deposit, or dumping or placing of its discarded component parts into or on any land or water
    3. The disassembly of any halon-containing equipment for reuse of its component parts.

- *Existing* - any solvent cleaning machine the construction or reconstruction of which was commenced on or before 29 November 1993, but did not meet the definition of a solvent cleaning machine on 2 December 1994 because it did not use halogenated HAP solvent liquid or vapor covered under this subpart to remove soils, becomes an existing source when it commences to use such liquid or vapor. A solvent cleaning machine moved within a contiguous facility or to another facility under the same ownership, constitutes an existing machine (40 CFR 63.461).

- *Fabric Filter or Baghouse* - an add-on air pollution control system that removes particulate matter (PM) and nonvaporous metals emissions by passing flue gas through filter bags (40 CFR 60.51c) **[December 1997]**.

- *Federally Enforceable* - all limitations and conditions enforceable by the Administrator, including those requirements developed pursuant to 40 CFR 60 and 61, requirements within any applicable state implementation plan, and any permit requirements established pursuant to 40 CFR 52.21 or under 40 CFR 51.18 and 40 CFR 51.24 (40 CFR 60.41b).

- *Followup Verification Test* - for the purpose of 82.156(i), these are tests that involve checking the repairs within 30 days of the appliance's returning to normal operating characteristics and conditions. Follow-up verification tests for appliances from which the refrigerant charge has been evacuated means a test conducted after the appliance or portion of the appliance has resumed operating at normal operating characteristics and conditions of temperature and pressure, except in cases where sound professional judgment dictates that these tests will be more meaningful if performed prior to the return to normal operating characteristics and conditions. A followup verification test with respect to repairs conducted without evacuation of the refrigerant charge means a reverification test conducted after the initial verification test and usually within 30 days of normal operating conditions. Where an appliance is not evacuated, it is only necessary to conclude any required changes in pressure, temperature, or other conditions to return the appliance to normal operating characteristics and conditions (40 CFR 82.152).

- *Freeboard Area* - for a batch cleaning machine, this is the area within the solvent cleaning machine that extends from the solvent/air interface to the top of the solvent cleaning machine; for an in-line cleaning machine, it is the area within the solvent cleaning machine that extends from the solvent/air interface to the bottom of the entrance or exit opening, whichever is lower (40 CFR 63.461).

- *Freeboard Ratio* - the ratio of the solvent cleaning machine freeboard height to the smaller interior dimensions (length, width, or diameter) of the solvent cleaning machine (40 CFR 63.461)

- *Full Charge* - For the purposes of 82.156(i) this is the amount of refrigerant required for normal operating characteristics and conditions of the appliance as determined by using one of the following four methods or a combination of one of the following four methods (40 CFR 82.152):
    1. the equipment manufacturers' determination of the correct full charge for the equipment
    2. determining the full charge by appropriate calculations based on component sizes, density of refrigerant, volume of piping, and all other relevant considerations
    3. the use of actual measurements of the amount of refrigerant added or excavated from the appliance
    4. the use of an established range based on the best available data, regarding the normal operating characteristics and conditions for the appliance, where the midpoint of the range will serve as the full charge, and where records are maintained in accordance with 82.166(q).

- *Gasoline Carrier* - any distributor who transports or stores, or causes the transportation or storage of, gasoline or diesel fuel without taking title to or otherwise having any ownership of the gasoline, and without altering either the quality or quantity of the gasoline or diesel fuel (40 CFR 80.2).

- *Gasoline Distributor* - any person who transports or stores, or causes the transportation or storage of gasoline or diesel fuel at any point between any gasoline refinery or importer's facility and any retail outlet or wholesale purchaser consumer facility (40 CFR 80.2).

- *Halogenated Hazardous Air Pollutant (HAP) Solvent* - methylene chloride (CAS No. 75-09-2), perchloroethylene (CAS No. 127-18-4), trichloroethylene (CAS No. 79-01-6), 1,1,1-trichloroethane (CAS No. 71-55-6), carbon tetrachloride (CAS No. 56-23-5), and chloroform (CAS 67-66-3) (40 CFR 63.461).

- *Halon* - any of the Class I, Group II substances listed in subpart A, Appendix A of 40 CFR Part 82. This group consists of the three halogenated hydrocarbons known as Halon 1211, Halon 1301, and Halon 2402, and all isomers of these chemicals (40 CFR 82.260) **[Added March 1998]**.

- *Halon Blend* - any mixture or combination of substances that contains two or more halons (40 CFR 82.260) **[Added March 1998]**.

- *Halon-Containing Equipment* - equipment used to store, transfer, and/or disperse halon (40 CFR 82.260) **[Added March 1998]**.

- *Halon Product* - any mixture or combination of substances that contains only one halon (e.g., Halon 1301 plus dinitrogen gas (40 CFR 82.260) **[Added March 1998]**.

- *High-Pressure Appliance* - an appliance that uses a refrigerant with a boiling point between -50 and 10 °C [-58 and 50 × °F] at atmospheric pressure (29.9 in. of Hg). This definition includes, but is not limited to, appliances using refrigerants -12, -22, -114, -500, or -502 (40 CFR 82.152).

- *Hospital* - any facility which has an organized medical staff, maintains at least six inpatient beds, and where the primary function of the institution is to provide diagnostic and therapeutic patient services and continuous nursing care primarily to human inpatients who are not related and who stay on average in excess of 24 h per admission. This definition does not include facilities maintained for the sole purpose of providing nursing or convalescent care to human patients who generally are not acutely ill but who require continuing medical supervision (40 CFR 60.51c) **[December 1997]**.

- *Hospital/Medical/Infectious Waste Incinerator or HMIWI or HMIWI Unit* - any device that combusts any amount of hospital waste and/or medical/infectious waste (40 CFR 60.51c) **[December 1997]**.

- *Hospital/Medical/Infectious Waste Incinerator Operator or HMIWI Operator* - any person who operates, controls, or supervises the day-to-day operation of an HMIWI (40 CFR 60.51c) **[December 1997]**.

- *Hospital Waste* - discards generated at a hospital, except unused items returned to the manufacturer. The definition of hospital waste does not include human corpses, remains, and anatomical parts that are intended for interment or cremation (40 CFR 60.51c) **[December 1997]**.

- *Idling Mode* - the time period when a solvent cleaning machine is not actively cleaning parts and the sump heating coils, if present, are turned on (40 CFR 63.461).

- *Idling Mode Cover* - any cover or solvent cleaning machine design that allows for the cover to shield the cleaning machine openings during the idling mode. A cover that meets this definition can also be used as a working mode cover if that definition is also met (40 CFR 63.461).

- *Immersion Cold Cleaning Machine* - a cold cleaning machine in which the parts are immersed in the solvent when being cleaned. A remote reservoir cold cleaning machine that is also an immersion cold cleaning machine is considered an immersion cold cleaning machine for the purposes of this subpart (40 CFR 63.461).

- *Industrial Process Refrigeration* - means, for the purposes of 40 CFR 82.156(i), complex customized appliances used in the chemical, pharmaceutical, petrochemical, and manufacturing industries. This sector also includes industrial ice machines, appliances used directly in the generation of electricity, and ice rinks (40 CFR 82.152).

- *Industrial Process Shutdown* - for the purposes of 82.156(i) this is an industrial process or facility that temporarily ceases to operate or manufacture whatever is being produced at that facility (40 CFR 82.152).

- *Infectious Agent* - any organism (such as a virus or bacteria) that is capable of being communicated by invasion and multiplication in body tissues and capable of causing disease or adverse health impacts in humans (40 CFR 60.51c) **[December 1997]**.

- *Initial Verification Test* - for the purposes of 82.156(i), these are those leak tests that are conducted as soon as practicable after the repair is completed (40 CFR 82.152).

- *In-Line Cleaning Machine or Continuous Cleaning Machine* - a solvent cleaning machine that uses an automated parts handling system, typically a conveyor, to automatically provide a continuous supply of parts to be cleaned. These units are fully enclosed except for the conveyor inlet and exit portals. In-line cleaning machines can be either cold or vapor cleaning machines (40 CFR 63.461).

- *Intermittent HMIWI* - an HMIWI that is designed to allow waste charging, but not ash removal, during combustion (40 CFR 60.51c) **[December 1997]**.

- *Large HMIWI* (40 CFR 60.51c) **[December 1997]**:
    1. except as provided in 2:
        a. an HMIWI whose maximum design waste burning capacity is more than 500 lb/h
        b. a continuous or intermittent HMIWI whose maximum charge rate is more than 500 lb/h

c. a batch HMIWI whose maximum charge rate is more than 4000 lb/day.

2. the following are not large HMIWI:
   a. a continuous or intermittent HMIWI whose maximum charge rate is less than or equal to 500 lb/h
   b. a batch HMIWI whose maximum charge rate is less than or equal to 4000 lb/day.

- *Lip Exhaust* - a device installed at the top of the opening of a solvent cleaning machine that draws in air and solvent vapor from the freeboard area and ducts the air and vapor away from the solvent cleaning area (40 CFR 63.461).

- *Low-level Radioactive Waste* - waste material which contains radioactive nuclides emitting primarily beta or gamma radiation, or both, in concentrations or quantities that exceed applicable Federal or state standards for unrestricted release. Low-level radioactive waste is not high-level radioactive waste, spent nuclear fuel, or by-product material as defined by the *Atomic Energy Act* of 1954 (42 U.S.C. 2014(e)(2)) (40 CFR 60.51c) **[December 1997]**.

- *Low-Loss Fitting* - any device that is intended to establish a connection between hoses, appliances, or recovery or recycling machines and that is designed to close automatically or to be closed manually when disconnected, minimizing the release of refrigerant from hoses, appliances, and recovery or recycling machines (40 CFR 82.152).

- *Low-Pressure Appliance* - an appliance that uses a refrigerant with a boiling point above 10 °C [50 °F] at atmospheric pressure (29.9 in. of Hg). This definition includes, but is not limited to, equipment utilizing refrigerants -11, -113, and -123 (40 CFR 82.152).

- *Major Maintenance, Service, or Repair* - any maintenance, service, or repair involving the removal of any or all of the following appliance components (40 CFR 82.152):
  1. compressor
  2. condenser
  3. evaporator
  4. auxiliary heat exchanger coil.

- *Malfunction* - any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused, in part, by poor maintenance or careless operation are not malfunctions. During periods of malfunction the operator shall operate within established parameters as much as possible, and monitoring of all applicable operating parameters shall continue until all waste has been combusted or until the malfunction ceases, whichever comes first (40 CFR 60.51c) **[December 1997]**.

- *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.

- *Maximum Charge Rate* (40 CFR 60.51c) **[December 1997]**:
  1. For continuous and intermittent HMIWI, 110 percent of the lowest 3-h average charge rate measured during the most recent performance test demonstrating compliance with all applicable emission limits.
  2. For batch HMIWI, 110 percent of the lowest daily charge rate measured during the most recent performance test demonstrating compliance with all applicable emission limits.

- *Maximum Design Waste Burning Capacity* (40 CFR 60.51c) **[December 1997]**:
  1. for intermittent and continuous HMIWI

     $C = P_v \times 15{,}000/8500$

where,
C = HMIWI capacity, lb/h
P_v = primary chamber volume, ft^3
15,000 = primary chamber heat release rate factor, $Btu/ft^3/h$
8500 = standard waste heating value, Btu/lb

2. for batch HMIWI,

$$C = P_v \times 4.5/8$$

where,
C = HMIWI capacity, lb/h
P_v = primary chamber volume, ft^3
4.5 = waste density, lb/ft^3
8 = typical hours of operation of a batch HMIWI, hours.

- *Maximum Fabric Filter Inlet Temperature* - 110 percent of the lowest 3-h average temperature at the inlet to the fabric filter (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with the dioxin/furan emission limit (40 CFR 60.51c) **[December 1997].**

- *Maximum Flue Gas Temperature* - 110 percent of the lowest 3-h average temperature at the outlet from the wet scrubber (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with the mercury (Hg) emission limit (40 CFR 60.51c). **[December 1997]**

- *Medical/Infectious Waste* - any waste generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals that is listed in paragraphs (1) through (7) of this definition. The definition of medical/infectious waste does not include hazardous waste identified or listed under the regulations in part 261 of this chapter; household waste, as defined in Section 261.4(b)(1) of this chapter; ash from incineration of medical/infectious waste, once the incineration process has been completed; human corpses, remains, and anatomical parts that are intended for interment or cremation; and domestic sewage materials identified in Section 261.4(a)(1) of this chapter (40 CFR 60.51c) **[December 1997]:**
  1. Cultures and stocks of infectious agents and associated biologicals, including: cultures from medical and pathological laboratories; cultures and stocks of infectious agents from research and industrial laboratories; wastes from the production of biologicals; discarded live and attenuated vaccines; and culture dishes and devices used to transfer, inoculate, and mix cultures.
  2. Human pathological waste, including tissues, organs, and body parts and body fluids that are removed during surgery or autopsy, or other medical procedures, and specimens of body fluids and their containers.
  3. Human blood and blood products including:
     a. liquid waste human blood
     b. products of blood
     c. items saturated and/or dripping with human blood
     d. items that were saturated and/or dripping with human blood that are now caked with dried human blood; including serum, plasma, and other blood components, and their containers, which were used or intended for use in either patient care, testing and laboratory analysis, or the development of pharmaceuticals. Intravenous bags are also included in this category.
  4. Sharps that have been used in animal or human patient care or treatment or in medical, research, or industrial laboratories, including hypodermic needles, syringes (with or without the attached needle), pasteur pipettes, scalpel blades, blood vials, needles with

attached tubing, and culture dishes (regardless of the presence of infectious agents). Also included are other types of broken or unbroken glassware that were in contact with infectious agents, such as used slides and cover slips.

5. Animal waste including contaminated animal carcasses, body parts, and bedding of animals that were known to have been exposed to infectious agents during research (including research in veterinary hospitals), production of biologicals or testing of pharmaceuticals.
6. Isolation wastes including biological waste and discarded materials contaminated with blood, excretions, exudates, or secretions from humans who are isolated to protect others from certain highly communicable diseases, or isolated animals known to be infected with highly communicable diseases.
7. Unused sharps including the following unused, discarded sharps: hypodermic needles, suture needles, syringes, and scalpel blades.

- *Medium HMIWI* (40 CFR 60.51c) **[December 1997]**:
  1. Except as provided in paragraph (2):
     a. an HMIWI whose maximum design waste burning capacity is more than 200 lb/h but less than or equal to 500 lb/h
     b. a continuous or intermittent HMIWI whose maximum charge rate is more than 200 lb/h but less than or equal to 500 lb/h
     c. a batch HMIWI whose maximum charge rate is more that 1600 lb/day but less than or equal to 4000 lb/day.
  2. The following are not medium HMIWI:
     a. a continuous or intermittent HMIWI whose maximum charge rate is less than or equal to 200 lb/h or more than 500 lb/h
     b. a batch HMIWI whose maximum charge rate is more than 4000 lb/day or less than or equal to 1600 lb/day.

- *Minimum Dioxin/Furan Sorbent Flow Rate* - 90 percent of the highest 3-h average dioxin/furan sorbent flow rate (taken, at a minimum, once every hour) measured during the most recent performance test demonstrating compliance with the dioxin/furan emission limit (40 CFR 60.51c) **[December 1997]**.

- *Minimum Hg Sorbent Flow Rate* - 90 percent of the highest 3-h average Hg sorbent flow rate (taken, at a minimum, once every hour) measured during the most recent performance test demonstrating compliance with the Hg emission limit (40 CFR 60.51c) **[December 1997]**.

- *Minimum Hydrogen Chloride (HCl) Sorbent Flow Rate* - 90 percent of the highest 3-h average HCl sorbent flow rate (taken, at a minimum, once every hour) measured during the most recent performance test demonstrating compliance with the HCl emission limit (40 CFR 60.51c) **[December 1997]**.

- *Minimum Horsepower or Amperage* - 90 percent of the highest 3-h average horsepower or amperage to the wet scrubber (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with the applicable emission limits (40 CFR 60.51c) **[December 1997]**.

- *Minimum Pressure Drop Across the Wet Scrubber* - 90 percent of the highest 3-h average pressure drop across the wet scrubber PM control device (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with the PM emission limit (40 CFR 60.51c) **[December 1997]**.

- *Minimum Scrubber Liquor Flow Rate* - 90 percent of the highest 3-h average liquor flow rate at the inlet to the wet scrubber (taken, at a minimum, once every minute) measured during the most

recent performance test demonstrating compliance with all applicable emission limits (40 CFR 60.51c) **[December 1997]**.

- *Minimum Scrubber Liquor pH* - 90 percent of the highest 3-h average liquor pH at the inlet to the wet scrubber (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance the HCl emission limit (40 CFR 60.51c) **[December 1997]**.

- *Minimum Secondary Chamber Temperature* - 90 percent of the highest 3-h average secondary chamber temperature (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with the PM, CO, or dioxin/furan emission limits (40 CFR 60.51c) **[December 1997]**.

- *Modification* - in relation to new source performance standards (NSPS), any physical or operational change to an existing facility that results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies except (40 CFR 60.14) **[December 1997]**:
    1. maintenance, repair, and replacement which the administrator determines to be routine for a source category
    2. an increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on the facility
    3. an increase in the hours of operation
    4. use of an alternate fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, the existing facility was designed to accommodate that alternate use. A facility will be designed to accommodate an alternative fuel or raw material if that use could be accomplished under the facility's construction specifications as assessed prior to the change.
    5. the addition or use of any system or device whose primary function is the reduction of air pollutants, except when an emission control system is removed or replaced by a system which the Administrator determines to be less than environmentally beneficial
    6. the relocation or change in ownership of an existing facility.

- *Modification or Modified HMIWI* - any change to an HMIWI unit after the effective date of these standards such that (40 CFR 60.51c):
    1. The cumulative costs of the modifications, over the life of the unit, exceed 50 percentum of the original cost of the construction and installation of the unit (not including the cost of any land purchased in connection with such construction or installation) updated to current costs, or
    2. The change involves a physical change in or change in the method of operation of the unit which increases the amount of any air pollutant emitted by the unit for which standards have been established under section 129 or section 111.

- *Motor Vehicle Air-Conditioner (MVAC)* - mechanical vapor compression refrigeration equipment used to cool the driver's or passenger's compartment of any motor vehicle. This definition is not intended to encompass hermetically sealed refrigeration systems used on motor vehicles for refrigerated cargo and the air conditioning systems on passenger buses using HCFC-22 refrigerant (40 CFR 82.32(d)) **[December 1997]**.

- *MVAC-Like Appliance* - mechanical vapor compression, open-drive compressor appliances used to cool the driver's or passenger's compartment of a nonroad motor vehicle. This includes the air-conditioning equipment found on agricultural or construction vehicles. This definition is not intended to cover appliances using HCFC-22 refrigerant (40 CFR 82.152).

- *New* - in relation to solvent cleaning machines, any solvent cleaning machine the construction or reconstruction of which is commenced after 29 November 1993 (40 CFR 63.461).

- *Normal Operating Characteristics or Conditions* - for the purposes of 82.156(i), this means temperature, pressures, fluid flows, speeds, and other characteristics that would normally be expected for a given process load and ambient conditions during operation. Normal operating characteristics and conditions are marked by the absence of atypical conditions affecting the operation of the refrigeration appliance (40 CFR 82.152).

- *Normally Containing a Quantity of Refrigerant* - containing the quantity of refrigerant within the appliance or appliance component when the appliance is operating with a full charge of refrigerant (40 CFR 82.152).

- *Opacity* - the degree to which emissions reduce the transmission of light and obscure the view of an object in the background (40 CFR 60.2).

- *Open Top Vapor Cleaning Machine* - a batch solvent cleaning machine that has its upper surface open to the air and boils solvents to create solvent vapor used to clean and/or dry parts (40 CFR 63.461).

- *Opening An Appliance* - any service, maintenance, or repair on an appliance that would release class I or class II refrigerant from the appliance to the atmosphere unless the refrigerant were previously recovered from the appliance (40 CFR 82.152).

- *Operating Day* - a 24-h period between 12:00 midnight and the following midnight during which any amount of hospital waste or medical/infectious waste is combusted at any time in the HMIWI (40 CFR 60.51c) **[December 1997].**

- *Operation* - the period during which waste is combusted in the incinerator, excluding periods of startup or shutdown (40 CFR 60.51c) **[December 1997].**

- *Pathological Waste* - waste material consisting of only human or animal remains, anatomical parts, and/or tissue, the bags/containers used to collect and transport the waste material, and animal bedding (if applicable) (40 CFR 60.51c) **[December 1997].**

- *Primary Chamber* - the chamber in an HMIWI that receives waste material, in which the waste is ignited, and from which ash is removed (40 CFR 60.51c) **[December 1997].**

- *Process Stub* - a length of tubing that provides access to the refrigerant inside a small appliance or room air conditioner and that can be resealed at the conclusion of repair or service (40 CFR 82.152).

- *Pyrolysis* - the endothermic gasification of hospital waste and/or medical/infectious waste using external energy (40 CFR 60.51c) **[December 1997].**

- *Pyrolysis/Combustion Unit* - a unit that produces gases, liquids, or solids through the heating of municipal solid waste, and the gases, liquids, or solids produced are combusted and emissions vented to the atmosphere (40 CFR 60.51b) **[December 1997].**

- *Reclaim Refrigerant* - to reprocess refrigerant to at least the purity specified in the Air Conditioning and Refrigeration Institute (ARI) Standard 700-1988, *Specifications for Fluorocarbon Refrigerants* (Appendix A to 40 CFR 82, subpart F) and to verify this purity using the analytical methodology prescribed in the ARI Standard 700-1988. In general, reclamation involves the use

of processes or procedures available only at a reprocessing or manufacturing facility (40 CFR 82.152).

- *Reclaimer* - a machine used to remove perchloroethylene from articles by tumbling them in a heated air stream (40 CFR 63.321).

- *Recover Refrigerant* - to remove refrigerant in any condition from an appliance and to store it in an external container without necessarily testing or processing it in any way (40 CFR 182.52(s)).

- *Recovery Efficiency* - the percentage of refrigerant in an appliance that is recovered by a piece of recycling or recovery equipment (40 CFR 82.152).

- *Recycle Refrigerant* - to extract refrigerant from an appliance and clean refrigerant for reuse without meeting all of the requirements for reclamation. In general, recycled refrigerant is refrigerant that is cleaned using oil separation and single or multiple passes through devices, such as replaceable core filter-driers, which reduce moisture, acidity, and particulate matter. These procedures are usually implemented at the field job site (40 CFR 82.152).

- *Refrigerated Condenser* - a vapor recovery system into which an air-perchloroethylene gas-vapor stream is routed and the perchloroethylene is condensed by cooling the gas-vapor stream (40 CFR 63.321).

- *Remote Reservoir Cold Cleaning Machine* - any device in which liquid solvent is pumped to a sink-like work area that drains solvent back into an enclosed container while parts are being cleaned, allowing no solvent to pool in the work area (40 CFR 63.461).

- *Secondary Chamber* - a component of the HMIWI that receives combustion gases from the primary chamber and in which the combustion process is completed (40 CFR 60.51c) **[December 1997]**.

- *Self-Contained Recovery Equipment* - refrigerant recovery or recycling equipment that is capable of removing the refrigerant from an appliance without the assistance of components contained in the appliance (40 CFR 82.152).

- *Service Involving Refrigerant* - any service during which discharge or release of refrigerant from the MVAC or MVAC-like appliance to the atmosphere can reasonably be expected to occur. Service involving refrigerant includes any service in which an MVAC or MVAC-like appliance is charged with refrigerant but no other service involving refrigerant is performed (i.e., a top-off) (40 CFR 82.32.(h)) **[December 1997]**.

- *Small Appliance* - any of the following products that are fully manufactured, charged, and hermetically sealed in a factory with 5 lb or less of refrigerant (40 CFR 82.152):
    1. refrigerators designed for home use
    2. freezers designed for home use
    3. room air conditioners (including window air conditioners and packaged terminal air conditioners)
    4. packaged terminal heat pumps
    5. dehumidifiers
    6. under-the-counter ice makers
    7. vending machines

8. drinking water coolers.

- *Small HMIWI* (40 CFR 60.51c) **[December 1997]**:
  1. Except as provided in paragraph (2):
     a. an HMIWI whose maximum design waste burning capacity is less than or equal to 200 lb/h
     b. a continuous or intermittent HMIWI whose maximum charge rate is less than or equal to 200 lb/h
     c. a batch HMIWI whose maximum charge rate is less than 1600 lb/day.
  2. The following are not small HMIWI:
     a. a continuous or intermittent HMIWI whose maximum charge rate is more than 200 lb/h
     b. a batch HMIWI whose maximum charge rate is more than 1600 lb/day.

- *Solvent/Air Interface* - for a vapor cleaning machine, the location of contact between the concentrated solvent vapor layer and the air. This location of contact is defined as the in-line height of the primary condenser coils. For a cold cleaning machine, it is the location of contact between the liquid solvent and the air (40 CFR 63.461).

- *Solvent Cleaning Machine* - any device or piece of equipment that uses halogenated HAP solvent liquid or vapor to remove soils from the surface of materials. Types of solvent cleaning machines include, but are not limited to, batch vapor, in-line vapor, in-line cold, and batch cold solvent cleaning machines. Buckets, pails, and beakers with capacities of 7.6 L (2 gal) or less are not considered solvent cleaning machines (40 CFR 63.461).

- *Standard Conditions* - a temperature of 20 °C and a pressure of 101.3 kPa (40 CFR 60.51c) **[December 1997]**.

- *Startup* - the period of time between the activation of the system and the first charge to the unit. For batch HMIWI, startup means the period of time between activation of the system and ignition of the waste (40 CFR 60.51c) **[December 1997]**.

- *Suitable Replacement Refrigerant* - for the purpose of 82.156(i)(7)(i), this is a refrigerant that is acceptable under section 612(c) of the CAAA90 and all regulations promulgated under that section, compatible with other materials with which it may come into contact, and able to achieve the temperatures required for the affected industrial process in a technically feasible manner (40 CFR 82.152).

- *Superheated Vapor System* - a system that heats the solvent vapor either passively or actively, to a temperature above the solvents boiling point. Parts are held in the superheated vapor before exiting the machine to evaporate the liquid solvent on them. Hot vapor recycle is an example of a superheated vapor system (40 CFR 63.461).

- *System-Dependent Recovery Equipment* - refrigerant recovery equipment that requires the assistance of components contained in an appliance to remove the refrigerant from the appliance (40 CFR 82.152).

- *System Mothballing* - the intentional shutting down of a refrigeration appliance undertaken for an extended period of time by the owners or operators of the facility, where the refrigerant has been evacuated from the appliance or the affected isolated section of the appliance, at least to atmospheric pressure (40 CFR 82.152).

- *Technician* - any person who performs maintenance, service, or repair that could reasonably be expected to release Class I or Class II refrigerants from appliances, except for MVACs, into the atmosphere. Technician also means any person who performs disposal of appliances except for small appliances, MVAC, and MVAC-like equipment that could be reasonably expected to release class I or class II refrigerants from the appliances into the atmosphere. Technician includes, but is not limited to, installers, contractor employees, in-house service personnel, and, in some cases, owners (40 CFR 82.152).

- *Technician* - any person who performs testing, maintenance, service, or repair that could reasonably be expected to release halons from equipment into the atmosphere. Technician also means any person who performs disposal of equipment that could reasonably be expected to release halons from the equipment into the atmosphere. Technician includes, but is not limited to, installers, contractor employees, in-house service personnel, and, in some cases, owners (40 CFR 82.260) **[Added March 1998]**.

- *Vapor Cleaning Machine* - a batch or in-line solvent cleaning machine that boils liquid solvent generating solvent vapor that is used as a part of the cleaning or drying cycle (40 CFR 63.461).

- *Very High-Pressure Appliance* - an appliance that uses a refrigerant with a boiling point below -50 °C [-58 °F] at atmospheric pressure (29.9 in. of Hg). This definition includes, but is not limited to, equipment utilizing refrigerants -13 and -503 (40 CFR 82.152).

- *Very Low Sulfur Oil* - an oil that contains no more than 0.5 weight percent sulfur or that, when combusted without SO_2 emission control, has an SO_2 emission rate equal to or less than 215 ng/J (0.5 lb/MBtu) heat input (40 CFR 60.41b).

- *Volatile Organic Compound (VOC)* - any compound of carbon, excluding CO, CO_2, carbonic acid, metallic carbides, or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions (40 CFR 51.100).

- *VOC Service* - in relationship to fugitive emissions, this is when a piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight (40 CFR 61.241).

- *Voluntary Certification Program* - a technician testing program operated by a person before that person obtained approval of a technician certification program (40 CFR 82.152).

- *Wet Scrubber* - an add-on air pollution control device that utilizes an alkaline scrubbing liquor to collect particulate matter (including nonvaporous metals and condensed organics) and/or to absorb and neutralize acid gases (40 CFR 60.51c) **[December 1997]**.

- *Wholesale Purchaser-Consumer* - any organization that is an ultimate consumer of gasoline or diesel fuel and which purchases or obtains gasoline or diesel fuel from a supplier for use in motor vehicles, and receives delivery of that product into a storage tank of at least 550-gal capacity substantially under the control of that organization (40 CFR 80.2).

- *Working Mode* - the time period when the solvent cleaning machine is actively cleaning parts (40 CFR 63.461).

- *Working Mode Cover* - any cover or solvent cleaning machine design that allows the cover to shield the cleaning machine openings from outside air disturbances while parts are being cleaned in the cleaning machine. A cover that is used during the working mode is opened only during parts entry and removal. A cover that meets this definition can also be used as an idling mode cover if that definition is also met (40 CFR 63.461).

AIR EMISSIONS MANAGEMENT

GUIDANCE FOR CHECKLIST USERS

	REFER TO CHECKLIST ITEMS:
All Facilities	A.1.1 through A.1.8
Medical Waste Incinerators	
General	A.30.1 through A.30.8
Monitoring	A.32.1 and A.32.2
Reporting/Recordkeeping Requirements	A.34.1 through A.34.4
Petroleum Products	A.55.1 through A.55.6
CFCs and Halons	
Purchasing/Procurement	A.85.1 through A.85.4
Repair/Recycling	A.90.1 through A.90.22
Recordkeeping	A.95.1 through A.95.3
Degreasing Operations	
Cold Cleaning	A.116.1 through A.116.3
Vapor Cleaning	A.117.1 through A.117.10
Reporting	A.118.1 through A.118.7

Records To Review

- State and local air pollution control regulations
- FWS air pollution control regulations
- Emissions inventory
- All air pollution source permits
- Emission monitoring records
- Opacity records
- Notices of violation (NOVs) from regulatory authorities
- Reports/complaints concerning air quality
- Air Emergency Episode Plan
- State and/or Federal regulatory inspections reports
- Documentation of preventive measure or action
- Results of air sampling at the conclusion of response action
- Training records and certificates pertaining to refrigerant reclaiming/recovery

Physical Features To Inspect

- All air pollution sources (fuel burners, incinerators, VOC sources, etc.)
- Air pollution monitoring and control devices
- Air emission stacks
- Air intake vents

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
A.1 **ALL FACILITIES**	
A.1.1. The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/ identifying information as the citation).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, interagency agreements, or equivalent state enforcement actions.
A.1.2. FWS facilities are required to comply with state and local air quality regulations (CAAA90, 42 USC 7418(a)).	Verify that the facility is complying with state and local air quality requirements. Verify that the facility is operating according to permits issued by the state or local agencies. (NOTE: See Appendix 1-1 for a list of Service facilities located in Class I areas.) (NOTE: Issues typically regulated by state and local agencies include: – air pollution episode standby plans – permits for construction and operation of sources of emissions – placement of control devices on fuel burning sources – incinerators with less than 45 metric tons/day (50 tons/day) heat input – open burning and detonation – prescribed burning and trash burning – firefighting training – motor vehicle emissions and inspections – use of vapor control systems at gas dispensing facilities – transfer of fuel in tank trucks – solvent metal cleaners such as degreasers and cold cleaners – fugitive dust emissions from sources such as roads, quarries, sand and gravel pits, and construction activities

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	– control of particulate emissions from woodworking shops – transportation of refuse or materials in open vehicles – emissions and emission control requirements for the operation of existing fossil fuel-fired steam generators – the spray painting of vehicles, buildings, and/or furniture – certification of vehicles transporting VOC liquids – certification for operators of boilers paving of roads and parking lots – certification for CFC replacement in vehicle air conditioning units – toxic air pollutants – indoor air pollution.) (NOTE: Under 42 USC 7418(c) and 7418(d), each department, agency, and instrumentality of executive, legislative, and judicial branches of the Federal Government is required to comply with valid vehicle inspection and maintenance programs, except for vehicles that are considered military tactical vehicles. Also, all employees operating vehicles on a property or a facility over which the Federal Government has jurisdiction are required to furnish proof of compliance with applicable requirements of any valid vehicle inspection and maintenance programs. The facility shall use one of the following methods to establish proof of compliance: – presentation by the vehicle owner of a valid certificate of compliance – presentation by the vehicle owner of proof of vehicle registration within the geographic area covered by the vehicle inspection and maintenance program (except for any program whose enforcement mechanism is not through the denial of vehicle registration) – another method approved by the vehicle inspection and maintenance program administrator.)
A.1.3. Facilities will meet regulatory requirements issued since the finalization of the handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).	Determine if any new regulations concerning air quality have been issued since the finalization of the handbook. Verify that the facility is in compliance with newly issued regulations.

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
A.1.4. FWS facilities should report all NOVs to the Region and Environmental and Facility Compliance (EFC) (MP) **[Revised June 1998].**	Determine if the facility has received an NOV relating to air quality. Verify that the NOV was reported to the Region and the EFC.
A.1.5. Facilities which have major sources are required to apply for CAAA90 Title V Permits (40 CFR 70.1).	Determine if the facility has any major sources. (NOTE: The emission threshold needed to qualify as a major source will vary depending on whether the source is classified as a major for criteria pollutants and whether it is located in an attainment or nonattainment area.) Verify that facilities with major air sources have applied for Title V permits. (NOTE: This is a state issued, Federally enforceable permit. If the state program has not been approved, the USEPA Region will issue the permit.)
A.1.6. Each facility located in an ozone nonattainment area with stationary sources of NO_x or VOCs is required to provide the state with a statement showing actual emissions of NO_x and VOCs from the sources (CAAA90, Section 182(a)(3)). **[December 1997].**	(NOTE: This checklist item is to be used only when a state has not implemented an equivalent state regulation.) Verify that the first statement, or inventory, was submitted by November 1993. Verify that the inventory is complete. Verify that statements have been submitted at least once a year after the initial statement indicating any changes or lack of change. (NOTE: See 40 CFR 81 for attainment status.)
A.1.7. Facilities are required to develop and maintain an inventory of all stationary air pollution sources and an inventory of all systems using Class I and Class II substances (RP, 561 FW 2.6C(1) and 2.6C(2)) **[Citation Revised June 1998].**	Verify that the facility has an inventory of all stationary sources and an inventory of all systems using Class I and Class II substances. (NOTE: See Appendix 1-3 for a list of Class I and Class II substances.)

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
A.1.8. A risk management program (RMP) is required when there are processes involving regulated substances above specific threshold levels (40 CFR 68.2(c), 68.150. and 68.190) **[Revised July 1999]**.	(NOTE: The requirements for an RMP must be met no later than 21 June 1999.) (NOTE: The effective date of 40 CFR 68 is stayed from 21 June 1999 to 21 December 1999 with respect to regulated flammable hydrocarbon substances when the substance is intended for use as a fuel and does not exceed 67,000 lb in a process that is not manufacturing the fuel, does not contain > a threshold quantity of another regulated substance, and is not collocated or interconnected to another covered process.) Determine if any processes or activities exceed the threshold quantities (see Appendix 1-1a). (NOTE: Unlike the Title V permit program, applicability is determined by the amount of the chemical actually stored/used in a process.) (NOTE: If there are several propane tanks, chlorine cylinders, etc., which do not individually exceed the threshold quantities, they may still be covered under this regulation based on their proximity to each other. USEPA has defined close proximity as "a release from one could lead to a release from the other." If they are in close proximity, the summed quantity must be compared to the threshold limit.) Verify that, if the threshold limits have been exceeded, an RMP has been developed. Verify that the RMP contains all required information, see Appendix 1-1d. Verify that the owner or operator revises and updates the RMP within 5 yr of its initial submission or most recent update required by the following, whichever is later: - no later than 3 yr after a newly regulated substance is first listed by EPA - no later than the date on which a new regulated substance is first present in an already covered process above a threshold quantity - no later than the date on which a regulated substance is first present above a threshold quantity in a new process - within 6 mo of a change that requires a revised PHA or hazard review - within 6 mo of a change that requires a revised offsite consequence analysis - within 6 mo of a change that alters the Program level that applied to any covered process.

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	Verify that, if a stationary source is no longer subject to this requirement, the owner or operator submits a revised registration to EPA within 6 mo indicating that the stationary source is no longer covered.

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
MEDICAL WASTE INCINERATORS **A.30** **General**	(NOTE: Existing medical waste incinerators will be required to comply with new regulations as EPA approves State-developed plans under Subpart Ce. The deadline for compliance with the new regulations will be no later than 15 September 2002.) (NOTE: The requirements of Subpart Ec do not apply to the following (40 CFR 60.50c(b) through 60.50c(h)): – a combustor during periods when only pathological waste, low-level radioactive waste, and/or chemotherapeutic waste (see definitions) is burned, provided the owner or operator of the combustor: – notifies the Administrator of an exemption claim – keeps records on a calendar quarter basis of the periods of time when only pathological waste, low-level radioactive waste and/or chemotherapeutic waste is burned – any co-fired combustor (see definitions) if the owner or operator: – notifies the Administrator of an exemption claim – provides an estimate of the relative amounts of hospital waste, medical/ infectious waste, and other fuels and wastes to be combusted – keeps records on a calendar quarter basis of the weight of hospital waste and medical/infectious waste combusted, and the weight of all other fuels and wastes combusted at the co-fired combustor – any combustor required to have a permit under section 3005 of the *Solid Waste Disposal Act* (SWDA) – any combustor which meets the applicability requirements under subpart Cb, Ea, or Eb of this part (standards or guidelines for certain municipal waste combustors) – any pyrolysis unit (see definitions) – cement kilns firing hospital waste and/or medical/infectious waste – physical or operational changes made to an existing HMIWI solely for the purpose of complying with emission guidelines under subpart Ce are not considered a modification and do not result in an existing HMIWI becoming subject to this subpart.)
A.30.1. HMIWIs which	(NOTE: Affected HMIWIs subject to this subpart are not subject to the

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
started construction after 20 June 1996 or which started modification after 16 March 1998 must meet specific emissions limitations. (40 CFR 60.50c(a) and 60.52c) **[December 1997].**	requirements of 40 CFR 64.) (NOTE: HMIWIs shall operate pursuant to a permit issued under the USEPA-approved state operating permit program by 15 September 2000 or on the effective date of a CAA Title V permit, whichever date is later.) Verify that, on or after the date on which the initial performance test is completed or is required to be completed, whichever date comes first, no owner or operator of an HMIWI discharges into the atmosphere: – from that HMIWI, any gases that contain stack emissions in excess of the limits presented in Appendix 1-1b – from the stack of that HMIWI, any gases that exhibit greater than 10 percent opacity (6-min block average). Verify that, on or after the date on which the initial performance test is completed or is required to be completed, whichever date comes first, no owner or operator utilizing a large HMIWI discharges into the atmosphere visible emissions of combustion ash from an ash conveying system (including conveyor transfer points) in excess of 5 percent of the observation period (i.e., 9 min per 3-h period), as determined by EPA Reference Method 22, except: – visible emissions discharged inside buildings or enclosures of ash conveying systems – during maintenance and repair of ash conveying systems. (NOTE: Maintenance and/or repair shall not exceed 10 operating days per calendar quarter unless the owner or operator obtains written approval from the state agency establishing a date whereby all necessary maintenance and repairs of ash conveying systems shall be completed.)
A.30.2. HMIWIs equipped	Verify that facilities equipped with the following control systems

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Fish and Wildlife Service	
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with a dry scrubber followed by a fabric filter, a wet scrubber, or a dry scrubber followed by a fabric filter and a wet scrubber must comply with specific operating parameters (40 CFR 60.56c(d), 60.56c(h) through 60.56c(j)) **[December 1997].**	operate within the parameters in Appendix 1-1c: – a dry scrubber followed by a fabric filter – a wet scrubber – a dry scrubber followed by a fabric filter and a wet scrubber. (NOTE: Operating parameter limits do not apply during performance tests.) (NOTE: A facility may conduct a repeat performance test within 30 days of violation of applicable operating parameters to demonstrate that the facility is not in violation of the applicable emission limit.) Verify that, if the facility is using an air pollution control device other than a dry scrubber followed by a fabric filter, a wet scrubber, or a dry scrubber followed by a fabric filter and a wet scrubber, the facility petitions the Administrator for additional site-specific operating parameters to be established during the initial performance test and continuously monitored thereafter. (NOTE: The initial performance test cannot be conducted until after the petition has been approved by the Administrator.) (NOTE: A facility may conduct a repeat performance test at any time to establish new values for the operating parameters. The EPA Administrator may request a repeat performance test at any time as well.)
A.30.3. HMIWIs equipped with a dry scrubber followed by a fabric filter are required to meet additional operating parameters (40 CFR 60.56c(e) and 60.56c(h)) **[December 1997].**	Verify that the HMIWI is not operated above the maximum charge rate and below the minimum secondary chamber temperature simultaneously. (NOTE: See Appendix 1-1c for operating parameters.) Verify that the HMIWI is not operated above the maximum fabric filter inlet temperature and below the minimum dioxin/furan sorbent flow rate simultaneously. Verify that the HMIWI is not operated above the maximum charge rate and below the minimum HCl sorbent flow rate simultaneously. Verify that the facility does not use the bypass stack except during startup, shutdown, or malfunction. (NOTE: A facility may conduct a repeat performance test within 30 days of violation of applicable operating parameters to demonstrate

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	that the facility is not in violation of the applicable emission limit.)
A.30.4. HMIWIs equipped with a wet scrubber are required to meet additional operating parameters (40 CFR 60.56c(f) and 60.56c(h)) **[December 1997].**	Verify that the HMIWI is not operated above the maximum charge rate and below the minimum pressure drop across the wet scrubber or below the minimum horsepower or amperage to the system simultaneously. (NOTE: See Appendix 1-1c for operating parameters.) Verify that the HMIWI is not operated above the maximum charge rate and below the minimum secondary chamber temperature simultaneously. Verify that the HMIWI is not operated above the maximum charge rate, below the minimum secondary chamber temperature, and below the minimum scrubber liquor flow rate simultaneously. Verify that the HMIWI is not operated above the maximum charge rate and below the minimum scrubber liquor pH simultaneously. Verify that the HMIWI is not operated above the maximum flue gas temperature and above the maximum charge rate simultaneously. Verify that the facility does not use the bypass stack except during startup, shutdown, or malfunction. (NOTE: A facility may conduct a repeat performance test within 30 days of violation of applicable operating parameters to demonstrate that the facility is not in violation of the applicable emission limit.)
A.30.5. HMIWIs equipped with a dry scrubber followed by a fabric filter and a wet scrubber are required to meet additional operating parameters (40 CFR 60.56c(g) and 60.56c(h)) **[December 1997].**	Verify that the HMIWI does not operate above the maximum charge rate and below the minimum secondary chamber temperature simultaneously. (NOTE: See Appendix 1-1c for operating parameters.) Verify that the HMIWI does not operate above the maximum fabric filter inlet temperature, above the maximum charge rate, and below the minimum dioxin/furan sorbent flow rate simultaneously. Verify that the HMIWI does not operate above the maximum charge rate and below the maximum scrubber liquor pH simultaneously. Verify that the HMIWI does not operate above the maximum charge rate and below the minimum Hg sorbent flow rate simultaneously.

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	Verify that the facility does not use the bypass stack except during startup, shutdown, or malfunction. (NOTE: A facility may conduct a repeat performance test within 30 days of violation of applicable operating parameters to demonstrate that the facility is not in violation of the applicable emission limit.)
A.30.6. HMIWI operators are required to be trained, qualified, and available (40 CFR 60.53c(a) through 60.53(g)) **[December 1997]**.	Verify that a trained and qualified HMIWI operator is accessible, either at the facility or available within 1 h, at all times that the HMIWI is being operated. (NOTE: The trained and qualified HMIWI operator may operate the HMIWI directly or be the direct supervisor of one or more HMIWI operators.) Verify that HMIWI operators were trained at a state-approved program or by completing the following requirements: – 24 h of training on the following subjects: – environmental concerns, including pathogen destruction and types of emissions – basic combustion principles, including products of combustion – operation of the type of incinerator to be used by the operator, including proper startup, waste charging, and shutdown procedures – combustion controls and monitoring – operation of air pollution control equipment and factors affecting performance (if applicable) – methods to monitor pollutants (continuous emission monitoring systems and monitoring of HMIWI and air pollution control device operating parameters) and equipment calibration procedures (where applicable) – inspection and maintenance of the HMIWI, air pollution control devices, and continuous emission monitoring systems – actions to correct malfunctions or conditions that may lead to malfunction – bottom and fly ash characteristics and handling procedures – applicable Federal, state, and local regulations – work safety procedures – pre-startup inspections – recordkeeping requirements – an examination designed and administered by the instructor – reference material distributed to the attendees covering the

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	course topics. Verify that HMIWI operators have obtained qualification by: – completion of a training course described above, and – either 6-mo experience as an HMIWI operator, 6-mo experience as a direct supervisor of an HMIWI operator, or completion of at least two burn cycles under the observation of two qualified HMIWI operators. (NOTE: Qualification is valid from the date on which the examination is passed or the completion of the required experience, whichever is later.) Verify that HMIWI operators have maintained qualification by completing and passing an annual review or refresher course of at least 4 h covering, at a minimum, the following: – update of regulations – incinerator operation, including startup and shutdown procedures – inspection and maintenance – responses to malfunctions or conditions that may lead to malfunction – discussion of operating problems encountered by attendees. (NOTE: A lapsed qualification shall be renewed by one of the following methods: – for a lapse of less than 3 yr, the HMIWI operator shall complete and pass a standard annual refresher course as described above – for a lapse of 3 yr or more, the HMIWI operator shall complete and pass a training course as described above.)
A.30.7. HMIWIs must prepare a waste management plan (40 CFR 60.55c) **[December 1997].**	Verify that the HMIWI has prepared a waste management plan. Verify that the waste management plan identifies both the feasibility and the approach to separate certain components of solid waste from the health care waste stream in order to reduce the amount of toxic emissions from incinerated waste. (NOTE: A waste management plan may include, but is not limited to: – elements such as: – paper – cardboard – plastics – glass – battery

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	– metal recycling – purchasing recycled or recyclable products.) (NOTE: A waste management plan may include different goals or approaches for different areas or departments of the facility and need not include new waste management goals for every waste stream.) (NOTE: A waste management plan should identify, where possible, reasonably available additional waste management measures, taking into account the effectiveness of waste management measures already in place, the costs of additional measures, the emission reductions expected to be achieved, and any other environmental or energy impacts they might have.) Verify that the American Hospital Association's publication entitled "An Ounce of Prevention: Waste Reduction Strategies for Health Care Facilities" was considered in the development of the waste management plan.
A.30.8. HMIWIs for which construction is commenced after 15 September 1997 must prepare an analysis of the impacts of the HMIWI (40 CFR 60.54c) **[December 1997]**.	Verify that, if the facility commenced construction after 15 September 1997, an impact analysis was prepared. Verify that, if the facility has not yet commenced construction, an impact analysis is being prepared. Verify that the impact analysis considers air pollution control alternatives that minimize, on a site-specific basis, to the maximum extent practicable, potential risks to public health or the environment. (NOTE: In considering alternatives, the analysis may consider: – costs – energy impacts – non-air environmental impacts – any other factors related to the practicability of the alternatives.) (NOTE: Analyses of facility impacts prepared to comply with state, local, or other Federal regulatory requirements may be used to satisfy the facility impact analysis requirement, as long as they include the consideration of air pollution control alternatives as specified above.) Verify that the facility impact analysis was submitted to the regulatory authority.

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MEDICAL WASTE INCINERATORS **A.32** **Monitoring**	(NOTE: Existing medical waste incinerators will be required to comply with new regulations as EPA approves state-developed plans under Subpart Ce. The deadline for compliance with the new regulations will be no later than 15 September 2002.) (NOTE: The requirements of Subpart Ec do not apply to the following (40 CFR 60.50c(b) through 60.50c(h)): – a combustor during periods when only pathological waste, low-level radioactive waste, and/or chemotherapeutic waste (see definitions) is burned, provided the owner or operator of the combustor: – notifies the Administrator of an exemption claim; and – keeps records on a calendar quarter basis of the periods of time when only pathological waste, low-level radioactive waste and/or chemotherapeutic waste is burned – any co-fired combustor (see definitions) if the owner or operator: – notifies the Administrator of an exemption claim – provides an estimate of the relative amounts of hospital waste, medical/ infectious waste, and other fuels and wastes to be combusted – keeps records on a calendar quarter basis of the weight of hospital waste and medical/infectious waste combusted, and the weight of all other fuels and wastes combusted at the co-fired combustor – any combustor required to have a permit under section 3005 of the SWDA – any combustor which meets the applicability requirements under subpart Cb, Ea, or Eb of this part (standards or guidelines for certain municipal waste combustors) – any pyrolysis unit (see definitions) – cement kilns firing hospital waste and/or medical/infectious waste – physical or operational changes made to an existing HMIWI solely for the purpose of complying with emission guidelines under subpart Ce are not considered a modification and do not result in an existing HMIWI becoming subject to this subpart.
A.32.1. HMIWIs must	(NOTE: The emission limits apply at all times except during periods of

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conduct performance testing in accordance with specific provisions to determine compliance with emission limits (40 CFR 60.56c(b)) **[December 1997].**	startup, shutdown, or malfunction, provided that no hospital waste or medical/infectious waste is charged to the HMIWI during startup, shutdown, or malfunction.) Verify that an initial performance test was conducted using approved testing methodology. (NOTE: The use of the bypass stack during any performance test shall invalidate that performance test.) Verify that, following the date on which the initial performance test was completed or was required to be completed, whichever date comes first, the facility determines compliance with: – the opacity limit by conducting an annual performance test (no more than 12 mo following the previous performance test) using appropriate procedures and test methods – the PM, CO, and HCl emission limits by conducting an annual performance test (no more than 12 mo following the previous performance test) using appropriate procedures and test methods (NOTE: If all three performance tests over a 3-yr period indicate compliance with the emission limit for a pollutant (PM, CO, or HCl), the facility may forego a performance test for that pollutant for the subsequent 2 yr.) (NOTE: At a minimum, a performance test for PM, CO, and HCl shall be conducted every third year (no more than 36 mo following the previous performance test). If a performance test conducted every third year indicates compliance with the emission limit for a pollutant (PM, CO, or HCl), the facility may forego a performance test for that pollutant for an additional 2 yr.) (NOTE: If any performance test indicates noncompliance with the respective emission limit, a performance test for that pollutant shall be conducted annually until all annual performance tests over a 3-yr period indicate compliance with the emission limit.) Verify that large HMIWIs annually determine compliance with the visible emission limits for fugitive emissions from flyash/bottom ash storage and handling. Verify that facilities using a CEMS to demonstrate compliance with any of the emission limits: – determine compliance with the appropriate emission limit(s) using

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	a 12-h rolling average, calculated each hour as the average of the previous 12 operating hours (not including startup, shutdown, or malfunction) – operate all CEMS in accordance with the applicable procedures under appendices B and F of 40 CFR 60.
A.32.2. HMIWIs must install, calibrate, maintain, and operate monitoring devices or establish methods to monitor operating parameters at applicable frequencies at all times except during periods of startup and shutdown (40 CFR 60.57c) **[December 1997].**	Verify that calibration of the monitoring devices is completed to manufacturer's specifications. Verify that, where a device is not installed, calibrated, maintained, and operated, a method has been established for monitoring the applicable operating parameters. Verify that the monitoring devices or methods used measure and record values for all operating parameters listed in Appendix 1-1c at the frequencies indicated at all times except during startup and shutdown. Verify that the facility is using (and appropriately calibrating, maintaining, and operating) a monitoring device or method to measure the use of the bypass stack including: – date – time – duration. Verify that, if site specific operating parameters were developed by the Administrator, the facility is using the equipment necessary to monitor these parameters. Verify that the facility is obtaining monitoring data at all times during HMIWI operation, except during periods of: – monitoring equipment malfunction – calibration – repair. (NOTE: At a minimum, valid monitoring data must be obtained for 75 percent of the operating hours per day and for 90 percent of the operating days per calendar quarter that the HMIWI is combusting hospital waste and/or medical/infectious waste.)

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MEDICAL WASTE INCINERATORS **A.34** **Reporting/Recordkeeping Requirements**	(NOTE: Existing medical waste incinerators will be required to comply with new regulations as EPA approves state-developed plans under Subpart Ce. The deadline for compliance with the new regulations will be no later than 15 September 2002.) (NOTE: The requirements of Subpart Ec do not apply to the following (40 CFR 60.50c(b) through 60.50c(h)): – a combustor during periods when only pathological waste, low-level radioactive waste, and/or chemotherapeutic waste (see definitions) is burned, provided the owner or operator of the combustor: – notifies the Administrator of an exemption claim – keeps records on a calendar quarter basis of the periods of time when only pathological waste, low-level radioactive waste and/or chemotherapeutic waste is burned – any co-fired combustor (see definitions) if the owner or operator: – notifies the Administrator of an exemption claim – provides an estimate of the relative amounts of hospital waste, medical/ infectious waste, and other fuels and wastes to be combusted – keeps records on a calendar quarter basis of the weight of hospital waste and medical/infectious waste combusted, and the weight of all other fuels and wastes combusted at the co-fired combustor – any combustor required to have a permit under section 3005 of the SWDA – any combustor which meets the applicability requirements under subpart Cb, Ea, or Eb of this part (standards or guidelines for certain municipal waste combustors) – any pyrolysis unit (see definitions) – cement kilns firing hospital waste and/or medical/infectious waste – physical or operational changes made to an existing HMIWI solely for the purpose of complying with emission guidelines under subpart Ce are not considered a modification and do not result in an existing HMIWI becoming subject to this subpart.)
A.34.1. HMIWIs must submit notifications as provided in 40 CFR 60.7 in addition to other specified information (40 CFR 60.58c(a)) **[December 1997].**	Verify that notification has been submitted as required for all NSPS. Verify that the following information has been submitted: – prior to commencement of construction: – a statement of intent to construct – the anticipated date of commencement of construction – all documentation produced as a result of siting requirements

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	– prior to initial startup: – the type(s) of waste to be combusted – the maximum design waste burning capacity – the anticipated maximum charge rate – if applicable, the petition for site-specific operating parameters.
A.34.2. HMIWIs must submit specified information to the appropriate authorities (40 CFR 60.58c(c)) **[December 1997].**	Verify that the facility submitted the following information no later than 60 days following the initial performance test with all reports signed by the facilities manager: – the initial performance test data as recorded – the values for the site-specific operating parameters – the waste management plan. Verify that the facility submitted an annual report 1 yr following the above submission and that subsequent reports are submitted no more than 12 mo following the previous report (under a Title V operating permit, these submissions are semi-annual). Verify that the annual report is signed by the facilities manager and includes: – the values for the site-specific operating parameters – the highest maximum operating parameter and the lowest minimum operating parameter, as applicable, for each operating parameter recorded for the calendar year being reported – the highest maximum operating parameter and the lowest minimum operating parameter, as applicable for each site-specific operating parameter for the calendar year preceding the year being reported, in order to provide the EPA Administrator with a summary of the performance of the HMIWI over a 2-yr period – any information, recorded for the calendar year being reported, related to: – identification of calendar days for which data on emission rates or operating parameters as described above have not been obtained, with an identification of the emission rates or operating parameters not measured, reasons for not obtaining the data, and a description of corrective actions taken – identification of calendar days, times, and durations of malfunctions with description of the malfunction and the corrective action taken – identification of calendar days for which data on emission rates or operating parameters as described above exceeded the applicable limits, with a description of the exceedances,

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	reasons for such exceedances, and a description of corrective actions taken – any information, recorded for the calendar year preceding the year being reported, in order to provide the EPA Administrator with a summary of the performance of the HMIWI over a 2-yr period, related to: – identification of calendar days for which data on emission rates or operating parameters as described above have not been obtained, with an identification of the emission rates or operating parameters not measured, reasons for not obtaining the data, and a description of corrective actions taken – identification of calendar days, times, and durations of malfunctions with a description of the malfunction and the corrective action taken – identification of calendar days for which data on emission rates or operating parameters as described above exceeded the applicable limits, with a description of the exceedances, reasons for such exceedances, and a description of corrective actions taken – if a performance test was conducted during the reporting period, the results of that test – if no exceedances or malfunctions were reported for the calendar year being reported, a statement that no exceedances occurred during the reporting period – any use of the bypass stack, the duration, reason for malfunction, and corrective action taken. Verify that the facility submits semiannual reports no later than 60 days following the reporting period containing any recorded information regarding: – identification of calendar days for which data on emission rates or operating parameters as described above have not been obtained, with an identification of the emission rates or operating parameters not measured, reasons for not obtaining the data, and a description of corrective actions taken – identification of calendar days, times and durations of malfunctions, a description of the malfunction, and the corrective action taken – identification of calendar days for which data on emission rates or operating parameters as described above exceeded the applicable limits, with a description of the exceedances, reasons for such exceedances, and a description of corrective actions taken. (NOTE: The first semiannual reporting period ends 6 mo following the

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	submission of information as required above. Subsequent reports shall be submitted no later than 6 calendar months following the previous report. All reports shall be signed by the facilities manager.) Verify that all records specified above are maintained onsite in either paper copy or computer-readable format, unless an alternative format is approved by the Administrator.
A.34.3. HMIWIs must maintain specific documentation at the facility (40 CFR 60.53c(h) through 60.53c(j)) **[December 1997].**	Verify that the following documentation is maintained at the HMIWI: – summary of the applicable standards – description of basic combustion theory applicable to an HMIWI – procedures for receiving, handling, and charging waste – HMIWI startup, shutdown, and malfunction procedures – procedures for maintaining proper combustion air supply levels – procedures for operating the HMIWI and associated air pollution control systems within the standards established under this subpart – procedures for responding to periodic malfunction or conditions that may lead to malfunction – procedures for monitoring HMIWI emissions – reporting and recordkeeping procedures – procedures for handling ash. Verify that a program has been established that requires all HMIWI operators to review annually the information in all required documentation. (NOTE: The initial review of the information in all required documentation shall be conducted by 16 September 1998 or prior to assumption of responsibilities affecting HMIWI operation, whichever date is later.) Verify that subsequent reviews of the information in all required documentation is conducted annually. Verify that all required documentation is kept in a readily accessible location for all HMIWI operators. (NOTE: All required documentation, as well as all training records, shall be available for inspection by the EPA or its delegated enforcement agent upon request.)
A.34.4. HMIWIs must	(NOTE: Required records should be maintained onsite in either a paper

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maintain specified information for a period of at least 5 yr (40 CFR 60.58c(b)) **[December 1997].**	copy or a computer-readable format.)
	
	Verify that the facility maintains the following information (as applicable) for a period of at least 5 yr:
	
	– calendar date of each record
	– records of the following data:
	  – concentrations of any pollutant listed in 60.52c or measurements of opacity as determined by the CEMS
	  – results of fugitive emissions tests
	  – HMIWI charge dates, times, and weights and hourly charge rates
	  – fabric filter inlet temperatures during each minute of operation
	  – amount and type of dioxin/furan sorbent used during each hour of operation
	  – amount and type of Hg sorbent used during each hour of operation
	  – amount and type of HCl sorbent used during each hour of operation
	  – secondary chamber temperatures recorded during each minute of operation
	  – liquor flow rate to the wet scrubber inlet during each minute of operation
	  – horsepower or amperage to the wet scrubber during each minute of operation
	  – pressure drop across the wet scrubber system during each minute of operation
	  – temperature at the outlet from the wet scrubber during each minute of operation
	  – pH at the inlet to the wet scrubber during each minute of operation
	  – records indicating use of the bypass stack, including dates, times, and durations
	  – for site-specific operating parameters, all operating parameter data collected
	– identification of calendar days for which data on emission rates or operating parameters have not been obtained, with an identification of the emission rates or operating parameters not measured, reasons for not obtaining the data, and a description of corrective actions taken
	– identification of calendar days, times, and durations of malfunctions with a description of the malfunction and the corrective action taken

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	– identification of calendar days for which data on emission rates or operating parameters exceeded the applicable limits, with a description of the exceedances, reasons for such exceedances, and a description of corrective actions taken – the results of the initial, annual, and any subsequent performance tests conducted to determine compliance with the emission limits and/or to establish operating parameters – all documentation produced as a result of the siting requirements – records showing the names of HMIWI operators who completed the review of information (see checklist item AE.34.2), including the date of the initial review and all subsequent annual reviews – records showing the names of HMIWI operators who have completed training, including documentation of training and dates of training – records showing the names of the HMIWI operators who have met the criteria for qualification and the dates of their qualification – records of calibration of any monitoring devices.

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A.55 **PETROLEUM PRODUCTS**	
A.55.1. Facilities are required to follow specific provisions concerning the types of gasoline available onsite (40 CFR 80.22 (b)).	Determine what grades of gasoline are used, where they are dispensed, and what controls are in place to ensure proper fueling of vehicles by interviewing personnel. Verify that, after 31 December 1995, no gasoline is sold, offered for sale, supplied, offered for supply, dispensed, transported, or introduced into commerce unless it contains lead additives of less than 0.05 g/gal.
A.55.2. Fuel tanks should be labeled to indicated what type of fuel is being stored (MP).	Verify that fuel tanks are labeled to indicate what type of fuel is being stored.
A.55.3. Gasoline pumps dispensing oxygenated gasoline are required to meet specific labeling requirements (40 CFR 80.35) **[May 1997]**.	Determine if the facility is located in an area with an oxygenated gasoline program with a minimum oxygen content per 1 gal or minimum oxygen content requirements in conjunction with a credit program. Verify that, if the facility is located in such an area, each gasoline pump dispensing oxygenated gasoline at a retail outlet has a label attached during the control period that states: The gasoline dispensed from this pump is oxygenated and will reduce CO pollution from motor vehicles. Verify that, if the facility is located in an area with an oxygenated gasoline program with a credit program and no minimum oxygen content requirement, the fuel pump at a retail outlet in the control area has a label that states the following: The fuel dispensed from this pump meets the requirements of the Clean Air Act as part of a program to reduce CO pollution from motor vehicles. Verify that the labels are: – in block letters of no less than 20-point bold type – in a color contrasting with the intended background – placed on the vertical surface of the pump on each side with gallonage and price meters and is on the upper two-thirds of the pump, clearly visible to the public.

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	(NOTE: Consult with state and local authorities concerning control areas and control periods.)
A.55.4. During high ozone seasons, and regulatory control periods, gasoline shall not be sold, offered for sale, imported, dispensed, supplied, or transported, that exceeds specific Reid vapor pressure standards (40 CFR 80.27(a)(2) and 80.27(d)).	Verify that facilities are monitored as indicated: – retailers and wholesale purchaser-consumers: during the high ozone season (1 June to 15 September of any year). – importers, distributors, resellers, or carriers: during the regulatory control period (1 May to 15 September of any year). Verify that a standard of 9.0 psi is not exceeded for all designated volatility attainment areas. Verify that the standards outlined in Appendix 1-2 are met for any designated volatility nonattainment areas (see 40 CFR 81). (NOTE: Gasoline that contains denatured, anhydrous ethanol of at least 9 percent and no more than 10 percent, may exceed the Reid vapor pressure standards outlined in Appendix 1-2 by 1.0 psi.) (NOTE: This information may also be available from the Material Safety Data Sheet (MSDS).)

A.55.5. No diesel fuel for use in motor vehicles may be sold, supplied, or dispensed for motor vehicles unless it meets specific criteria (40 CFR 80.24(a)(1)) **[May 1997]**.	Verify that the diesel fuel for motor vehicles meets the following parameters:
	– it has a sulfur percentage, by weight, no greater than 0.05 percent
	– it has a cetane index of at least 40 or a maximum aromatic content of 35 volume percent
	– it is free of visible evidence of the following:
	  – the blue green dye 1,4-dialkylamino-anthraquinone
	  – the dye solvent red 164.

A.55.6. After 1 July 1997 retailers and wholesale purchaser-consumers (see definitions) handling over 10,000 gal/mo of fuel are required to provide specific equipment on dispensing pumps (40 CFR 80.22(j)) **[October 1996]**.	Determine if the facility handles over 10,000 gal/mo of fuel. Verify that each pump from which gasoline or methanol is introduced into motor vehicles is equipped with a nozzle that dispenses fuel at a flow rate not exceeding 10 gal/min. (NOTE: After 1 January 1998 this requirements applies to every retailer and wholesale purchaser-consumer regardless of size.) (NOTE: This requirement does not apply to pumps that are shown to be dedicated to heavy-duty vehicles, boats, or airplanes.)

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CFCs AND HALONS **A.85** **Purchasing/ Procurement**	
A.85.1. Facilities which sell Class I or Class II substances suitable for use as a refrigerant in containers of less than 20 lb are required to display a specific sign (40 CFR 82.42(c)).	Verify that a sign is displayed stating the following: IT IS A VIOLATION OF FEDERAL LAWS TO SELL CONTAINERS OF CLASS I AND CLASS II REFRIGERANT OF LESS THAN 20 LB OF SUCH REFRIGERANT TO ANYONE WHO IS NOT PROPERLY TRAINED AND CERTIFIED TO OPERATE APPROVED REFRIGERANT RECYCLING EQUIPMENT. (NOTE: See Appendix 1-3 for a list of Class I and Class II substances.)
A.85.2. Facilities are required to comply with restrictions concerning the use of CFC and halon substitutes (40 CFR 82.174(b) through 82.174(d)).	Verify that no personnel at the facility uses a substitute which they know, or have reason to know, was manufactured, processed, or imported in violation of Federal regulations. Verify that, when a substitute is used, it is an acceptable substitute and is used according to the use restrictions. (NOTE: 40 CFR 82.170 through 82.194 contains lists of acceptable and unacceptable substitutes.)
A.85.3. As of January 1, 2015 the use of Class II substances (see Appendix 1-3) is forbidden except in certain situations (42 USC 7671d(a)).	Verify that a program is underway to eliminate the use of Class II substances unless: – the substance has been reused or recycled – it is used and entirely consumed (except for trace quantities) in the production of other chemicals – it is used as a refrigerant in appliances manufactured prior to 1 January 2020.

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A.85.4. No Class I or Class II substances suitable for use in motor vehicles as a refrigerant (see Appendix 1-3) can be sold or distributed in any container that is less than 20 lb to any person unless that person is trained and certified (40 CFR 82.34(b) and 82.42(b)(3)) **[May 1997]**.	Determine if the facility carries any of the Class I or Class II substances listed in Appendix 1-3. Verify these substances are only sold or distributed to certified individual by reviewing records of sales and distribution. Verify that distribution and sales records for these substances are kept for 3 yr. (NOTE: Sales of these substances can be made to an uncertified individual if the purchaser is purchasing small containers for resale only and the purchaser certifies it as such.)

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CFCs AND HALONS **A.90** **Repair/Recycling**	
A.90.1. Personnel repairing or servicing MVACs for consideration and personnel repairing or servicing MVAC-like appliances are required to be trained and certified and use approved equipment (40 CFR 82.34(a), 82.42(a), 82.42(b)(1), 82.42(b)(2), and 82.42(b)(4)) **[December 1997].**	Determine if the facility services/repairs MVAC or MVAC-like appliances for consideration. Verify that the individual who does the repair and/or servicing is certified and that the equipment being used is approved by the USEPA. Verify that the USEPA Administration has been notified that there is an individual onsite who has been trained and certified and is performing MVAC repair. Verify that the facility keeps records for 3 yr of where the refrigerant is sent and personnel certification. (NOTE: Certifications are not transferable.) (NOTE: The term for payment is not clearly defined. For FWS facilities, the interpretation will be that if the personnel repairing or servicing MVACs are paid employees of the facility, they must be trained and certified.)
A.90.2. Certain recycling and recovery equipment is required to be certified by an approved equipment testing organization (40 CFR 82.158(a), 82.158(h), 82.158(j)).	Verify that the equipment that is used is certified. Verify that recycling or recovery equipment intended for use in the maintenance, service, or repair of appliances, except MVACs and MVAC-like appliances, or during the disposal of appliances except small appliances, MVACs, and MVAC-like appliances are certified by an approved testing organization. (NOTE: Such certification will be evidenced by a label affixed by the manufacturer which states: THIS EQUIPMENT HAS BEEN CERTIFIED BY (APPROVED EQUIPMENT TESTING ORGANIZATION) TO MEET EPA'S MINIMUM REQUIREMENTS FOR RECYCLING OR RECOVERY EQUIPMENT INTENDED FOR USE WITH (APPROPRIATE CATEGORY OR APPLIANCE).) (NOTE: The facility is not required to retest the equipment.)

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	Verify that recycling and recovery equipment intended for use during the maintenance, service, or repair of MVAC-like appliances are certified by the USEPA or an independent standards testing organization.
A.90.3. Persons who maintain, service, or repair appliance, except MVACs, and persons who dispose of appliances, except for small appliances, room air conditioners, MVACs and MVAC-like appliances are required to be certified through an approved technician certification program (40 CFR 82.161).	Verify that personnel have received technician certification. (NOTE: Apprentices are exempt from this requirement if the apprentice is closely and continually supervised by a certified technician while performing any maintenance, service, repair, or disposal that could reasonably be expected to release refrigerant from appliances into the environment.)
A.90.4. No person maintaining, servicing, repairing, or disposing of appliances can knowingly vent or release to the environment any Class I or Class II substance used as a refrigerant (40 CFR 82.150 and 82.154(a)).	Determine if the facility is maintaining, servicing, repairing, or disposing of appliances containing refrigerants. Verify that Class I or II substances are not being vented to the atmosphere. (NOTE: *De minimis* releases that are associated with good faith attempts to recycle or recover refrigerants are not considered a violation.) (NOTE: These requirements apply to the following: – any person servicing, maintaining, or repairing appliances except for MVACs – persons disposing of appliances, including MVAC – refrigerant reclaimers, appliance owners, recycling and recovery equipment.)
A.90.5. No person can	Verify that the required practices outline in 40 CFR 82.156 (see

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open appliances, except MVACs, for maintenance, service, or repair, and no person can dispose of appliances, except for small appliances, MVAC, and MVAC-like appliances unless specific requirements are met (40 CFR 82.154(b), 82.156(a)(5)).	checklist items A.90.9 through A.90.19) are met. Verify that equipment is used that is certified for the appliance in question.
A.90.6. Facilities maintaining, servicing, or repairing appliances, except for MVACs, and facilities disposing of appliances, except for small appliances and MVACs, are required to submit certification to the USEPA (40 CFR 82.162(a)).	Verify that the facility has submitted certification to the USEPA that it has acquired certified recovery or recycling equipment and is in compliance with applicable requirements. (NOTE: Submission of certification is required no later than 12 August 1993 or 20 days after starting the business.)
A.90.7. Facilities recovering refrigerant from small appliances, MVACs, and MVAC-like appliances for the purpose of disposal of these appliances, are required to certify to the USEPA that appropriate recovery equipment has been acquired (40 CFR 82.162(c)).	Verify that the facility has submitted certification to the USEPA that it has acquired appropriate recovery equipment.
A.90.8. Facilities opening appliances, except for small appliances and	Verify that the facility has at least one available piece of equipment. (NOTE: Refrigerant may be returned to the appliance from which it is

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MVACs for maintenance, service, or repair and all persons disposing of appliances other than small appliances, MVACs, and MVAC-like appliances must have at least one piece of certified, self-contained recovery equipment available (40 CFR 82.156(b) and 82.156 (e)).	recovered or to another appliance without being recycled or reclaimed, unless the appliance is an MVAC or MVAC-like appliance.) (NOTE: Facilities that maintain, service, repair, or dispose of only appliances that they own and contain pump out units are exempt from this requirement, but not from other requirements of 40 CFR 82.156.)
A.90.9. System dependent equipment must not be used with appliances normally containing more than 15 lb of refrigerant (40 CFR 82.156(c)).	Verify that system-dependent equipment is not used with appliances normally containing more than 15 lb of refrigerant unless the system dependent equipment is permanently attached to the appliance as a pump out unit.
A.90.10. When appliances are opened for service, maintenance or repair, except for MVACs, the refrigerant must be evacuated in either the entire unit or the part to be serviced, if the part can be isolated, to a system receiver or a certified recovery or recycling machine (40 CFR 82.150 and 82.156(a)).	Verify that refrigerant is evacuated to either a system receiver or certified recovery or recycling machine. Verify that technicians ensure that the applicable level of evacuation has been reached in the appliance or the part before it is opened.
A.90.11. When appliances, except for small appliances, MVAC, and MVAC-like appliance,	Verify that, if disposal is occurring, the refrigerant is being evacuated to a certified recovery or recycling machine. Verify that a certified technician ensures that the applicable level of

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are disposed of, the refrigerant must be evacuated from the entire unit to a certified recovery or recycling machine (40 CFR 82.150 and 82.156(a)).	evacuation has been reached in the appliance before it is opened.
A.90.12. When appliances, except for small appliance, MVAC, and MVAC-like appliances, are opened for maintenance, service, or repair, they must be evacuated to specific levels before the appliance is opened (40 CFR 82.150 and 82.156(a)(1) and 82.156(a)(2)).	Verify that evacuation is done to the levels in Appendix 1-4 prior to opening the appliance unless one of the following is met: – evacuation of the appliance is not to be done after completion of the maintenance service or repair, and the maintenance service or repair is not major – the evacuation limits in Appendix 1-4 are not possible because of leaks in the equipment, or the refrigerant being recovered would be substantially contaminated – the recycling or recovery equipment is certified. Verify that, if evacuation is not to be done after completion of the maintenance, service, or repair and the maintenance, service, or the repair is not major, the appliance is: – evacuated to a pressure no higher than 0 psig before it is opened if it is a high or very high-pressure appliance – pressurized to 0 psig before it is opened if it is a low pressure appliance. (NOTE: Persons pressurizing low pressure appliances that use refrigerants with boiling points at or below 85 °F at 29.9 in. of Hg (e.g., CFC-11 or HCFC-123) must not use methods, such as nitrogen, that require subsequent purging. Persons pressurizing low-pressure appliances that use refrigerants with boiling points above 85 °F at 29.9 in. of Hg (e.g., CFC 113) must use heat to raise the internal pressure, but may use nitrogen to raise the internal pressure of the appliance from the level attainable through use of heat to atmospheric pressure.) Verify that, if the evacuation limits in Appendix 1-4 are not possible because of leaks in the equipment or the refrigerant being recovered would be substantially contaminated, the person opening the appliance: – isolates leaking from nonleaking components whenever possible – evacuate nonleaking components to be opened to the levels

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	specified in Appendix 1-4 – evacuates leaking components to be opened to the lowest level that can be attained without substantially contaminating the refrigerant, in no case exceeding 0 psig. Verify that, if the recycling or recovery equipment is certified, the technicians follow the manufacturer's directions for achieving required recovery efficiency.
A.90.13. Appliances, except for small appliances, MVACs, and MVAC-like appliances, that are being disposed of, must be evacuated to the levels in Appendix 1-4 (40 CFR 82.150 and 82.156(a)(3)).	Verify that appliances are evacuated to the levels listed in Appendix 1-4 prior to disposal unless leaks in the appliance do not allow for the attainment of Appendix 1-4 or would substantially contaminate the refrigerant being recovered. Verify that, if Appendix 1-4 levels are not attainable, persons disposing of appliances: – isolate leaking from nonleaking components whenever possible – evacuate leaking components to the lowest level that can be attained without substantially contaminating the refrigerant (not to exceed 0 psig).
A.90.14. Specific evacuation limits must be met when opening small appliances for maintenance, service, or repair (40 CFR 82.150 and 82.156 (a)(4)).	Verify that, when recycling and recovery equipment manufactured prior to 15 November 1993 is used, 80 percent of the refrigerant is recovered or the small appliance is evacuated to 4 in. of Hg vacuum. Verify that, when recycling and recovery equipment manufactured on or after 15 November 1993 is used, 90 percent of the refrigerant in the appliance is recovered when the compressor in the appliance is operating, or 80 percent of the refrigerant when the compressor is not operating or the small appliance is evacuated to 4 in. of Hg vacuum.
A.90.15. Facilities which take the final step in the disposal process of a small appliance, room air conditioning, MVACs, or MVAC-like appliances must meet specific standards (40 CFR 82.156(f), 82.166(i), and 82.166(m)).	(NOTE: This includes, but is not limited to, scrap recyclers and landfill operators.) Verify that facilities: – recover any remaining refrigerant from the appliance – check that the refrigerant has been evacuated from the appliance or shipment of appliances by reviewing a signed statement from the person from whom the appliance or shipment of appliances is obtained that all refrigerant has been recovered. Verify that copies of signed statements are retained for 3 years.
A.90.16. Facilities recovering refrigerant for	Verify that, if the facility recovers refrigerant from MVACs and MVAC-like appliances for the purpose of disposal of the appliance, the

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the purpose of disposal must meet specific standards (40 CFR 82.156(g) and 82.156 (h)).	system pressure is reduced to or below 102 mm of Hg vacuum. Verify that the facility recovering refrigerant from small appliances for the purpose of disposal of the appliance does one of the following: – recovers 90 percent of the refrigerant when the compressor in the appliance is operating – recovers 80 percent of the refrigerant in the appliance when the compressor in the appliance is not operating – evacuate the small appliance to 4 in. of Hg vacuum.
A.90.17. Leaking commercial refrigeration equipment must be repaired when specific limits are exceeded (40 CFR 82.156(i)(1), 82.156(i)(3), 82.156(i)(6), 82.156(i)(8) through 82.156(i)(10)).	Verify that, if the facility owns commercial refrigeration equipment normally containing more than 50 lb of refrigerant, all leaks are repaired if the equipment is leaking at a rate such that the loss of refrigerant will exceed 35 percent of the total charge during a 12-mo period. Verify that leaks have been repaired within 30 days of discovery or within 30 days of when the leak should have been discovered, if the installation/CW facility intentionally shielded themselves from information which would have revealed a leak. (NOTE: The following are exemptions to the leak repair requirements: – within 30 days, the installation/CW facility has developed a 1-yr retrofit or retirement plan for the leaking equipment no later than 30 days after the decision to retire or retrofit the appliance and the plan is kept at the site of the equipment – a Federally owned commercial or comfort cooling appliance can have up to 1 yr to complete repairs if the following criteria are met: – there is an appropriations/procurements problem – the USEPA is notified and explanation provided of the reason for delay – records are kept to document that these criteria are met – the appliance is mothballed.) Verify that if the owners or operators of a federally owned commercial refrigerant appliance determines the leaks cannot be repaired within the required time limit and an extension is needed, the following actions have been done: – all repair efforts and notification efforts are documented – the reason for inability to comply is submitted to the USEPA within 30 days of discovering the leaks.

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	(NOTE: Owner or operators of federally owned commercial refrigeration equipment may have more than 30 days to repair leaks of the appliance is located in an area subject to radiological contamination or where the shutting down of the appliance would directly lead to radiological contamination.) Verify that if the facility has received a time extension for the repairs ensure the repair efforts performed are those that sound professional judgment indicate will be sufficient to the bring the leak rates below applicable allow able annual rate. Verify that if an industrial process shutdown has occurred or repairs have been made while an appliance is mothballed, an initial verification was performed within 30 days of completing repairs or within 30 days of bringing the appliance back online, if taken off line, but no sooner than with the system has achieved normal operating characteristics and conditions. Verify that an initial verification test is done at the conclusion of the repair effort without an industrial process shutdown or system mothballing and a follow-up verification test win 30 days after the initial test. (NOTE: See also 40 CFR 82.156(i)(8) (checklist item A.90.18) for additional requirements if an extension has been granted.)
A.90.18. Leaking industrial process refrigeration equipment must be repaired when specific limits are exceeded (40 CFR 82.156(i)(2), 82.156(i)(6), through 82.156(i)(10)).	Verify that, if the facility has any industrial process refrigeration equipment onsite normally containing more than 50 lb of refrigerant, all leaks are repaired if the equipment is leaking at a rate such that the loss of refrigerant will exceed 35 percent of the total charge during a 12-mo period. Verify that leaks have been repaired within 30 days of discovery or within 30 days of when the leak should have been discovered, if the installation/CW facility intentionally shielded themselves from information which would have revealed a leak. (NOTE: The following are exemptions to the leak repair requirements: – within 30 days, the installation/CW facility has developed a 1-yr retrofit or retirement plan for the leaking equipment that is kept at the site of the equipment – delays caused by meeting the requirements of other Federal, state, or local laws – unavailability of a suitable replacement – the equipment is custom built – the supplier of the appliance has quoted a delivery time of more than 30 weeks from when the order is placed

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	– an industrial process shutdown is needed to repair the leak – the appliance is mothballed. Verify that the USEPA is notified when compliance is not possible. Verify that records are kept documenting the reasons for missing deadlines. Verify that, if an industrial process shutdown has occurred or repairs have been made while an appliance is mothballed, an initial verification was performed within 30 days of completing repairs or within 30 days of bringing the appliance back online, if taken off line, but no sooner than when the system has achieved normal operating characteristics and conditions. Verify that an initial verification test is done at the conclusion of the repair effort without an industrial process shutdown or system mothballing and a follow-up verification test within 30 days after the initial test. (NOTE: See also 40 CFR 82.156(i)(8) (see checklist item A.90.18) for additional requirements if an extension has been granted.)
A.90.19. Owners of Federally owned commercial or comfort cooling appliances are allowed an additional year to complete a retrofit or retirement of an appliance if specific requirements are met (40 CFR 82.156(I)(8)).	Verify that, if the activity has been allowed a 1-yr extension beyond the initial 1-yr retrofit period, the following criteria are met: – a delivery time of more than 30 wk from the beginning of the official procurement process is quoted due to an appropriations/ procurements problem – the USEPA is notified within 6 mo of the expiration of the 30-day period with an explanation why more than 1 yr is needed – records are kept to document that these criteria are met.
AE.90.20. Personnel testing, maintaining, servicing, repairing, or disposing of halon-	Verify that personnel testing, maintaining, servicing, repairing, or disposing of halon-containing equipment or using such equipment for technician training do not knowingly vent or otherwise release into the environment any halons used in such equipment.

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containing equipment or using such equipment for technician training may not knowingly vent or otherwise release into the environment any halons used in such equipment (40 CFR 82.270(b) and 82.270(f)) **[Added March 1998].**	(NOTE: De minimis releases associated with good faith attempts to recycle or recover halon are not subject to this prohibition. Release of residual halon contained in fully discharged total flooding fire extinguishing systems would be considered a de minimis release associated with good faith attempts to recycle or recover halon. Release of halons during testing of fire extinguishing systems is not subject to this prohibition if the following conditions are met: – systems or equipment employing suitable alternative fire extinguishing agents are not available – system or equipment testing requiring release of extinguishing agent is essential to demonstrate system or equipment functionality – failure of the system or equipment would pose great risk to human safety or the environment – a simulant agent cannot be used in place of the halon during system or equipment testing for technical reasons.) (NOTE: This requirement also does not apply to: – releases of halons associated with research and development of halon alternatives, and releases of halons necessary during analytical determination of halon purity using established laboratory practices – qualification and development testing during the design and development process of halon-containing systems or equipment when such tests are essential to demonstrate system or equipment functionality and when a suitable simulant agent cannot be used in place of the halon for technical reasons. – emergency release of halons for the legitimate purpose of fire extinguishing, explosion inertion, or other emergency applications for which the equipment or systems were designed.) Verify that a halon release is not allowed to occur as a result of failure to maintain halon-containing equipment.
AE.90.21. Technicians who test, maintain, service, repair or dispose of halon-containing	Verify that technicians who test, maintain, service, repair, or dispose of halon-containing equipment are trained regarding halon emissions reduction.

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equipment are required to meet specific training requirements (40 CFR 82.270(c)) **[Added March 1998].**	(NOTE: Organizations that employ technicians who test, maintain, service, repair or dispose of halon-containing equipment shall take appropriate steps to ensure that technicians hired on or before 6 April 1998 are trained regarding halon emissions reduction by 1 September 1998. Technicians hired after 6 April 1998 shall be trained regarding halon emissions reduction within 30 days of hiring, or by 1 September 1998, whichever is later.)
AE.90.22. The disposal of halon and/or halon-containing equipment is required to be done according to specific parameters (40 CFR 82.270(d) and 82.270(e)) **[Added March 1998].**	Verify that halon-containing equipment is only disposed of by sending it for halon recovery to one of the following: – a manufacturer operating in accordance with NFPA 10 and NFPA 12A standards – a fire equipment dealer operating in accordance with NFPA 10 and NFPA 12A standards – a recycler operating in accordance with NFPA 10 and NFPA 12A standards. (NOTE: This requirement does not apply to ancillary system devices such as electrical detection control components which are not necessary to the safe and secure containment of the halon within the equipment, to fully discharged total flooding systems, or to equipment containing only de minimis quantities of halons.) Verify that halon is only disposed of by sending it for recycling to a recycler operating in accordance with NFPA 10 and NFPA 12A standards, or by arranging for its destruction using one of the following controlled processes: – liquid injection incineration – reactor cracking – gaseous/fume oxidation – rotary kiln incineration – cement kiln – radiofrequency plasma destruction – an EPA-approved destruction technology that achieves a – destruction efficiency of 98 percent or greater.

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CFCs AND HALONS **A.95** **Recordkeeping**	
A.95.1. Facilities that sell or distribute any Class I or Class II substance for use as a refrigerant are required to retain invoices (40 CFR 82.166(a) and 82.166(m)).	Verify that facilities which sell or distribute any Class I or Class II substance for use as a refrigerant retain invoices indicating the name of the purchaser, the date of sale, and the quantity of refrigerant purchased. Verify that records are retained for 3 yr.
A.95.2. Facilities servicing appliances normally containing 50 lb or more of refrigerant are required to supply the owner of the appliance with documentation as to how much refrigerant was added and the owner of the appliance must retain the servicing records (40 CFR 82.166(j), 82.166(k), and 82.166(m)).	Verify that documentation of servicing and amounts of refrigerant added is provided to the appliance owner and retained for 3 yr.
A.95.3. Facilities with commercial refrigeration or industrial process appliances are required to keep specific records in relation to leaks (40 CFR 82.166(n) through 82.166(q)).	Verify that, when leaking appliances are not repaired on time, the following types of documentation is submitted to the USEPA and a copy maintained onsite: – reasons why more than 30 days are needed to complete repair work and an estimate of when the work will be completed – changes to work completion dates and the reasons why – a plan to fix other outstanding leaks for which repairs are planned but not yet completed if the intent is to establish that the appliance's annual leak rate does not exceed the allowable leak rate – dates and types of all initial and follow-up verification tests performed within 30 days after conducting the test – a plan to complete the retrofit or replacement of the system when more than one year is needed – reason why more than 1 yr is needed to retrofit the system when applicable.

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	Verify that all documentation includes the following: – identification of the facility – the leak rate – method used to determine the leak rate and full charge – the date a leak rate of greater than the allowable annual leak rate was discovered – the location of the leak to the extent determined to date – any repair work that has been completed and the date the work was completed. Verify that activities which wish to exclude purged refrigerants that are destroyed from annual leak rate calculations maintain records onsite to support the amount of refrigerant claimed as sent for destruction and the records include: – flow rate – quantity or concentration of the refrigerant in the vent stream – periods of purge flow – the following for the first time the exclusion is utilized: – identification of the facility and contact person, including address and phone number – a general description of the refrigerant appliance – a description of the methods used to determine the quantity of refrigerant sent for destruction and type of records that are being kept – the frequency of monitoring and data recording – a description of the control device, and its destruction efficiency. Verify that, if the activity chooses to determine the full charge of an affected appliance by using an established range or using that methodology in combination with other methodologies, the following information is maintained: – identification of the owner/operator – the location of the appliance – the original range for the full charge of the appliance, its midpoint, and how the range was determined – the date revisions occur.

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DEGREASING OPERATIONS **A.116** **Cold Cleaning**	(NOTE: The requirements in 40 CFR 63.460 through 63.469 apply to each individual batch vapor, in-line vapor, in-line cold, and batch cold solvent cleaning machine that uses any solvent containing methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, or chloroform, or any combination of these halogenated HAP solvents, in total concentration greater than 5 percent by weight, as a cleaning and/or drying agent. Wipe cleaning activities, such as using a rag containing halogenated solvent or a spray cleaner containing halogenated solvent are not included.)
A.116.1. Facilities with immersion batch cold solvent cleaning machines are required to comply with specific parameters (40 CFR 63.462(a)).	Verify that one of the following is met: – a tightly fitting cover is used that is closed at all times except during parts entry and removal, and a water layer at a minimum thickness of 2.5 cm (1 in.) on the surface of the solvent within the cleaning machine – a tightly fitting cover is used that is closed at all times except during part entry and removal and there is a freeboard ratio of 0.75 or greater.
A.116.2. Immersion batch cold solvent cleaning machines with tightly fitting covers and a freeboard ratio of 0.75 or greater are required to be operated according to specific parameter (40 CFR 63.462(c)(1) through 63.462(c)(2)).	Verify that all waste solvent is collected and stored in closed containers (NOTE: The closed container may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.) Verify that if a flexible hose or flushing device is used, flushing is performed only within the freeboard area of the solvent cleaning machine. Verify that the solvent cleaned parts are drained for 15 s or until dripping has stopped, whichever is longer. (NOTE: Parts having cavities or blind holes shall be tipped or rotated while draining.) Verify that the solvent level does not exceed the fill line. Verify that spills during solvent transfer are wiped up immediately and the rags stored in a covered container. Verify that, when an air- or pump-agitated solvent bath is used, the

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	agitator is operated to produce a rolling motion of the solvent but not observable splashing. Verify that, when the cover is open, the cold cleaning machine is not exposed to drafts greater than 40 m/min (132 ft/min) as measured between 1 and 2 m (3.3 and 6.6 ft) upwind and at the same elevation as the tank lip. Verify that sponges, fabric, wood, and paper products are not cleaned.
A.116.3. Remote-reservoir batch cold solvent cleaning machines are required to have a tightly fitting cover over the sump that is closed at all times except during the cleaning of parts and must be operated according to specific parameters (40 CFR 63.462(b) and 63.462(c)(1) through 63.462(c)(2)).	Verify that remote-reservoir batch cold solvent cleaning machines have a tightly fitting cover over the sump that is closed at all times except during the cleaning of parts. Verify that all waste solvent is collected and stored in closed containers (NOTE: The closed container may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.) Verify that, if a flexible hose or flushing device is used, flushing is performed only within the freeboard area of the solvent cleaning machine. Verify that solvent cleaned parts are drained for 15 s or until dripping has stopped, whichever is longer. (NOTE: Parts having cavities or blind holes shall be tipped or rotated while draining.) Verify that the solvent level does not exceed the fill line. Verify that spills during solvent transfer are wiped up immediately and the rags stored in a covered container. Verify that, when and air- or pump-agitated solvent bath is used, the agitator is operated to produce a rolling motion of the solvent but not observable splashing. Verify that, when the cover is open, the cold cleaning machine is not exposed to drafts greater than 40 m/min (132 ft/min) as measured between 1 and 2 m (3.3 and 6.6 ft) upwind and at the same elevation as the tank lip. Verify that sponges, fabric, wood, and paper products are not

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DEGREASING OPERATIONS **A.117** **Vapor Cleaning**	(NOTE: The requirements in 40 CFR 63.400 through 63.409 apply to each individual batch vapor, in-line vapor, in-line cold, and batch cold solvent cleaning machine that uses any solvent containing methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, or chloroform, or any combination of these halogenated HAP solvents, in total concentration greater than 5 percent by weight, as a cleaning and/or drying agent. Wipe cleaning activities, such as using a rag containing halogenated solvent or a spray cleaner containing halogenated solvent are not included.)
A.117.1. Batch vapor or in-line solvent cleaning machines are required to be designed to meet specific standards (40 CFR 63.463(a)).	Verify that each cleaning machine is designed and operated to meet the following equipment or technique requirements: – there is an idling and downtime mode cover that can be readily opened or closed that completely covers the cleaning machine opening when in place, and is free of cracks, holes, or other defects – there is a reduced room draft so that when the cover is open, the machine is not exposed to drafts greater than 40 m/min (132 ft/min) as measured between 1 and 2 m (3.3 and 6.6 ft) upwind and at the same elevation as the tank lip. Verify that there is a freeboard ratio of 0.75 or greater. Verify that each cleaning machine has an automated parts handling system capable of moving parts or parts baskets at a speed of 3.4 m/min (11 ft/min) or less from the initial leading of parts through removal of cleaned parts. Verify that each vapor cleaning machine is equipped with a: – device that shuts off the sump heat if the sump liquid solvent level drops to the sump heater coils – vapor level control device that shuts off sump heat if the vapor level in the vapor cleaning machine rises above the height of the primary condenser – primary condenser. Verify that each cleaning machine which uses a lip exhaust is designed and operated to route all collected solvent vapors through a properly operated and maintained carbon adsorber.
A.117.2. Batch vapor or	Verify that air distribution across the cleaning machine opening is

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in-line solvent cleaning machines are required to be operated according to specific standards (40 CFR 63.463(d)).	controlled by using one of the following: – covers are in place during idling mode and during the downtime mode unless either the solvent has been removed from the machine or maintenance or monitoring is being performed that required the cover to not be in place – there is a reduced room draft so that when the cover is open, the machine is not exposed to drafts greater than 40 m/min (132 ft/min) as measured between 1 and 2 m (3.3 and 6.6 ft) upwind and at the same elevation as the tank lip. Verify that the parts basket or the parts being cleaned in an open-top batch vapor cleaning machine does not occupy more than 50 percent of the solvent/air interface area unless that parts basket or the parts are introduced at a speed of 0.9 m/min (3 ft/min) or less. Verify that any spraying operations are done within the vapor zone or within a section of the solvent cleaning machine that is not directly exposed to the ambient air. Verify that parts are oriented so that solvent drains from them freely. Verify that parts baskets or parts are not removed from any solvent cleaning machine until dripping has stopped. Verify that, during startup of each vapor cleaning machine, the primary condenser is turned on before the sump heater. Verify that, during shutdown of a vapor cleaning machine, the sump heater is turned off and the solvent vapor layer allowed to collapse before the primary condenser is turned off. Verify that, when solvent is added or drained, the solvent is transferred using threaded or other leakproof couplings and the end of the pipe in the solvent sump is located beneath the liquid solvent surface. Verify that solvent cleaning machines and controls are maintained as recommended by the manufacturer. (NOTE: The USEPA Administrator may request operators of solvent cleaning machines to take test on solvent cleaning machine procedures. This test is only required at the request of the Administrator.)

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	Verify that waste solvent, still bottoms, and sump bottoms are collected and stored in closed containers. (NOTE: The closed container may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.) Verify that sponges, fabric, wood, and paper products are not cleaned.

A.117.3. Batch vapor cleaning machines are required to be designed and operated to meet specific emission control standards (40 CFR 63.463(b)).	Verify that batch vapor cleaning machines with a solvent/air interface area of 1.21 m^2 (13 ft^2) or less meet one of the following:
	
	– one of the following control methods or equivalent other methods is used:
	  – working mode cover, freeboard ration of 1.0, superheated vapor
	  – freeboard refrigeration device, superheated vapor
	  – working mode cover, freeboard refrigeration device
	  – reduced room draft, freeboard ratio of 1.0, superheated vapor
	  – freeboard refrigeration device, reduced room draft
	  – freeboard refrigeration device, freeboard ratio of 1.0
	  – freeboard refrigeration device, dwell
	  – reduced room draft, dwell, freeboard ratio of 1.0
	  – freeboard refrigeration device, carbon adsorber
	  – freeboard ratio of 1.0, superheated vapor, carbon adsorber
	– the solvent cleaning machine can achieve and maintain an idling emission limit of 0.22 kg/h/m^2 (0.045 lb/h/ft^2) of solvent/air interface area.
	
	Verify that batch vapor cleaning machines with a solvent/air interface area greater than 1.21 m^2 (13 ft^2) meet one of the following:
	
	– one of the following control combinations or other equivalent methods is used:
	  – freeboard refrigeration device, freeboard ratio of 1.0, superheated vapor
	  – dwell, freeboard refrigeration device, reduced room draft
	  – working-mode cover, freeboard refrigeration device, superheated vapor
	  – freeboard ratio of 1.0, reduced room draft, superheated vapor
	  – freeboard refrigeration device, reduced room draft, superheated vapor
	  – freeboard refrigeration device, reduced room draft, freeboard

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	ratio of 1.0 – freeboard refrigeration device, superheated vapor, carbon adsorber – the solvent cleaning machine can achieve and maintain an idling emission limit of 0.22 kg/h/m^2 (0.045 lb/h/ft^2) of solvent/air interface area.
A.117.4. In-line cleaning machines are required to be designed and operated to meet specific emission control standards (40 CFR 63.463(c)).	Verify that existing in-line cleaning machines meet one of the following: – one of the following control combinations is used: – superheated vapor, freeboard ratio of 1.0 – freeboard refrigeration device, freeboard ratio of 1.0 – dwell, freeboard refrigeration device – dwell, carbon adsorber – the in-line cleaning machine can achieve and maintain an idling emission limit of 0.10 kg/h/m^2 (0.021 lb/h/ft^2) of solvent/air interface area. Verify that new in-line cleaning machines meet one of the following: – one of the following control combinations is used: – superheated vapor, freeboard refrigeration device – freeboard refrigeration device, carbon adsorber – superheated vapor, carbon adsorber – the in-line cleaning machine can achieve and maintain an idling emission limit of 0.10 kg/h/m^2 (0.021 lb/h/ft^2) of solvent/air interface area.
A.117.5. Depending on the control techniques used to achieve compliance, specific actions are required to be done (40 CFR 63.463(e)(2)).	(NOTE: These requirements only apply to solvent cleaning machines as identified in 40 CFR 63.463(b) and 63.463(c), see checklist items A.117.3 and A.117.4.) Verify that, if freeboard refrigeration devices are used, the chilled air blanket temperature measured (in °F) at the center of the air blanket is no greater than 30 percent of the solvents boiling point. Verify that, if a reduced room draft is used to achieve compliance, the following are done: – it is ensured that the flow or movement of air across the top of the free board area of the solvent cleaning machine enclosure does not exceed 15.2 m/min (50 ft/min) at any time – operating conditions under which the wind speed was demonstrated to be 15.2 m/min (50 ft/min) or less are established

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	and maintained. Verify that, if a working mode cover is used to achieve compliance, the following are done: – the cover open only for part entrance and removal and completely covers the cleaning machine openings when closed – the working mode cover is maintained free of cracks, holes, and other defects. Verify that, if an idling mode cover is used to achieve compliance, the following are done: – the cover is in place whenever parts are not in the solvent cleaning machine and completely covers the cleaning machine openings when in place – the idling mode cover is maintained free of cracks, holes, and other defects. Verify that, if dwell is used to achieve compliance, the following are done: – the appropriate dwell time is determined for each part or parts basket or the maximum dwell time – after cleaning, each part is held in the freeboard area above the vapor zone for the swell time necessary. Verify that, if a superheated vapor system is used to achieve compliance, the following are done: – the temperature of the vapor at the center of the superheated vapor is at least 10 °F above the solvents boiling point – the manufacturers specifications for determining the minimum proper dwell time are followed – the parts remain within the superheated vapor for at least the minimum proper dwell time. Verify that, if a carbon adsorber, in conjunction with a lip exhaust, is used to achieve compliance, the following are done: – the concentration of the organic solvent in the exhaust does not exceed 100 ppm of any halogenated HAP compound – the carbon adsorber bed is not bypassed during desorption – the lip exhaust is located above the solvent cleaning machine cover so that the cover closes below the lip exhaust level.

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A.117.6. Batch vapor or in-line cleaning machines that are meeting the requirements for idling emission limit standards are required to perform specific actions (40 CFR 63.463 (f)).	(NOTE: This applies to the idling emission limit standards outlined in 40 CFR 63.463(b) and 63.463(c), see checklist items A.117.3 and A.117.4.) Verify that an initial performance test was conducted to demonstrate compliance and establish parameters for monitoring. Verify that periodic monitoring is done. Verify that the solvent cleaning machine is being operated within the parameters identified in the initial performance test.
A.117.7. Instead of complying with the standards in 40 CFR 63.463, an operator may elect to comply with the standards out lined in 40 CFR 63.464 (40 CFR 63.464).	(NOTE: The requirements outlined in this checklist item can, at the designation of the operator, replace the requirements in 40 CFR 63.463, see check list items A.117.1 through A.117.6 and A.118.7.) Verify that, if the cleaning machine has a solvent/air interface, the following is done: – a log is maintained of solvent additions and deletions for each solvent cleaning machine – emissions are equal to or less than the following applicable emissions limit: – batch vapor solvent cleaning machine - 150 kg/m^2/mo – existing in-line solvent cleaning machines - 153 kg/m^2/mo – new in-line solvent cleaning machines - 99 kg/m^2/mo. (NOTE: Measurements are 3 mo rolling average monthly emission limits.) Verify that, if the cleaning machine is a batch vapor cleaning machine and does not have a solvent/air interface, the following is done: – a log is maintained of solvent additions and deletions for each solvent cleaning machine – emissions are equal to or less than the following applicable emissions limit: – for cleaning machines with a cleaning capacity that is less than or equal to 2.96 m^3, the emissions limit is determined by either using the equation or the Table in Appendix 1-5 – for cleaning machines with a cleaning capacity that is greater than 2.95 m^3, the emissions limit is determined by using the equation in Appendix 1-5.

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A.117.8. Depending on the control techniques used to achieve compliance, specific monitoring is required to be done (40 CFR 63.466).	Verify that compliance with the 3 mo rolling average is demonstrated on a monthly basis. (NOTE: These requirements only apply to solvent cleaning machines as identified in 40 CFR 63.463(b) and 40 CFR 63.463(c), see checklist items A.117.3 and A.117.4.) Verify that monitoring is conducted as follows and the results recorded on a weekly basis: – if a freeboard refrigeration device is used to comply with the above standards, the operator uses a thermometer or thermocouple to measure the temperature of the center of the air blanket during the idling mode – if a superheated vapor system is used to comply, the operator uses a thermometer or thermocouple to measure the temperature in the center of the superheated vapor zone while the solvent cleaning machine is in the idling mode. Verify that monitoring is conducted as follows and the results recorded on a monthly basis: – if a cover (working mode, downtime mode, and/or idling mode) is used to comply, there is a visual inspection to identify any cracks, holes, or other defects and that the cover completely covers the machine when closed – if a dwell is used, the actual dwell time is determined by measuring the period of time that parts are held within the freeboard area of the solvent cleaning machine after cleaning. Verify that monitoring is conducted as follows when using reduced room draft: – if the reduced room draft is maintained by controlling room parameters. there is initial monitoring of the windspeed and of room parameters, quarterly monitoring of windspeed, and weekly monitoring of room parameters – if an enclosure (full or partial) is used to achieve a reduced room draft, there is an initial monitoring and thereafter monthly monitoring of the windspeed within the enclosure and a monthly visual inspection of the enclosure to determine if it is free of cracks, holes, and other defects. (NOTE: These requirements for weekly and monthly monitoring and reduced room draft monitoring apply when the operator is complying with the following equipment standards: – using one of the approved control combinations for batch vapor

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	solvent cleaning machines with a solvent/air interface of 1.21 m^2 (13 ft^2) or less – using one of the approved control combinations for batch vapor solvent cleaning machines with a solvent/air interface of greater than 1.21 m^2 (13 ft^2) – using one of the approved control combinations for existing in-line solvent cleaning machines – using one of the approved control combinations for new in-line solvent cleaning machines.) Verify that the operators of batch vapor or in-line solvent cleaning machines that are complying with the requirements in 40 CFR 63.463 (see checklist items A.117.1 through A.117.6 and A.118.7) are monitoring the hoist speed as follows: – speed is determined by measuring the time it takes to travel a measured distance and dividing the measuring distance by the time – monitoring is done monthly, but if there are no exceedances the first year monitoring can be done quarterly – if there is an exceedance, monitoring is done monthly again – if it can be demonstrated to the Administrator in the initial compliance report that the hoist cannot exceed a speed of 3.4 m/min (11 ft/min) the required monitoring frequency is quarterly. Verify that operators using a carbon adsorber in order to achieve compliance measure and record the concentration of halogenated HAP solvent in the exhaust of the carbon adsorber weekly with a colorimetric detector tube and the test is conducted while the machine is in the working mode and venting to the adsorber. Verify that operators using idling emission limit standards for compliance using controls other than those already addressed in this checklist item: – establish a monitoring frequency for each control – submit the monitoring frequency to the Administrator for approval in the initial test report. (NOTE: These requirements for idling emissions monitoring apply when the operator is complying with the following equipment

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	standards: – using a batch vapor cleaning machines with a solvent/air interface area of 1.21 m^2 (13 ft^2) or less which can achieve and maintain an idling emission limit of 0.22 kg/h/m^2 (0.045 lb/h/ft^2) of solvent/air interface area – using a batch vapor cleaning machines with a solvent/air interface area greater than 1.21 m^2 (13 ft^2) which can achieve and maintain an idling emission limit of 0.22 kg/h/m^2 (0.045 lb/h/ft^2) of solvent/air interface area – using an existing in-line cleaning machines which can achieve and maintain an idling emission limit of 0.10 kg/h/m^2 (0.021 lb/h/ft^2) of solvent/air interface area – using a new in-line cleaning machine which can achieve and maintain an idling emission limit of 0.10 kg/h/m^2 (0.021 lb/h/ft^2) of solvent/air interface area.)
A.117.9. Operators of batch vapor or in-line solvent cleaning machines are required to keep specific records (40 CFR 63.467(a) and (b)).	Verify that operators of batch vapor or in-line solvent cleaning machines maintain the following records in written or electronic form for the life of the machine: – owners manuals, or if not available, written maintenance and operating procedures for the machine and the control equipment – the date of installation for the machine and all of its control devices – records of required tests of a dwell is used – records of the initial performance test for machines complying with the idling emissions limit standards – records of the halogenated HAP solvent content for each solvent used in a solvent cleaning machine. (NOTE: If the exact date of installation is not known, a letter certifying that the cleaning machine and control devices were installed prior to, or on, 29 November 1993 or after 29 November 1993 can be substituted.) Verify that operators of batch vapor or in-line solvent cleaning machines maintain the following records in written or electronic form for 5 yr: – the results of control device monitoring – information on action taken to comply with monitoring and performance test requirements – estimates of annual solvent consumption for each solvent cleaning machine

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	– records of the date and result of weekly measurement if a carbon adsorber is used.
A.117.10. Operators of batch vapor or in-line solvent cleaning machines who choose to comply with the alternate standard of 40 CFR 63.464 are required to keep specific records (40 CFR 63.467(c) and 63.467 (d)).	Verify that operators of batch vapor or in-line solvent cleaning machines which choose to comply with the alternate standard of 40 CFR 63.464 maintain the following records in written or electronic form for 5 yr: – the dates and amounts of solvent that are added to the solvent cleaning machine – the solvent composition of the wastes removed from cleaning machines – calculation sheets showing how monthly emissions and the rolling 3 mo average emissions were determined and the results of all calculations. Verify that operators of batch vapor or in-line solvent cleaning machines without a solvent/air interface which choose to comply with the alternate standard of 40 CFR 63.464 maintain records on the method used to determine cleaning capacity of the cleaning machine.

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DEGREASING OPERATIONS **A.118** **Reporting**	(NOTE: The requirements in 40 CFR 63.460 through 63.469 apply to each individual batch vapor, in-line vapor, in-line cold, and batch cold solvent cleaning machine that uses any solvent containing methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, or chloroform, or any combination of these halogenated HAP solvents, in total concentration greater than 5 percent by weight, as a cleaning and/or drying agent. Wipe cleaning activities, such as using a rag containing halogenated solvent or a spray cleaner containing halogenated solvent are not included.)
A.118.1. Operators of an existing solvent cleaning machine are required to submit an initial notification to the Administrator no later than 29 august 1995 (40 CFR 63.468(a)).	Verify that the report is submitted and contains the following information: – the name and address of the owner or operator – the address (i.e., physical location) of the solvent cleaning machine – a brief description of each solvent cleaning machine including machine type, solvent/air interface area, and existing controls – the date of the installation for each machine or a letter certifying that the machine was installed prior to, or after 29 November 1993 – the anticipated compliance approach for each machine – an estimate of annual halogenated HAP solvent consumption for each solvent cleaning machine.
A.118.2. Operators of a new solvent cleaning machine are required to submit an initial notification to the Administrator (40 CFR 63.468 (b)).	Verify that new sources, for which construction or reconstruction had commenced and initial startup had not occurred before 2 December 1994, submit the report as soon as practicable but no later than 31 January 1995. Verify that new sources, for which construction or reconstruction commenced after 2 December 1994, submit the report as soon as practicable before the construction or reconstruction is planned to commence. Verify that the report is submitted and contains the following information: – a brief description of each solvent cleaning machine including machine type, solvent/air interface area, and existing controls – the anticipated compliance approach for each machine – an estimate of annual halogenated HAP solvent consumption for each solvent cleaning machine.

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A.118.3. Operators of batch cold solvent cleaning machine are required to submit a compliance report to the Administrator (40 CFR 63.468(c)).	Verify that, for existing sources, this report is submitted no later than 150 days after 2 December 1997. Verify that for new sources the report is submitted no later than 150 days after startup or 1 May 1995, whichever is later. Verify that the report includes: – the name and address of the owner or operator – the address (i.e., physical location) of the solvent cleaning machine – a statement signed by the owner or operator stating that the solvent cleaning machine for which the report is being submitted is in compliance – the compliance approach for each machine.
A.118.4. Operators of batch vapor or in-line solvent cleaning machines are required to submit an initial statement of compliance to the Administrator (40 CFR 63.468(d)).	Verify that, for existing sources, this report is submitted no later than 150 days after 2 December 1997. Verify that, for new sources, the report is submitted no later than 150 days after startup or 1 May 1995, whichever is later. Verify that the report includes: – the name and address of the owner or operator – the address (i.e., physical location) of the solvent cleaning machine – a list of control equipment required to be monitored, a list of the parameters that are monitored and the values of these parameters measured on or during the first month after the compliance date – conditions to maintain the wind speed requirements – a test report for machines complying with the idling emission limit standards for tests of idling emissions. Verify that, if a carbon adsorber is used, the date and results of the weekly measurements of the halogenated HAP solvent concentration is included in the report.
A.118.5. Operators of	Verify that, for existing sources, this report is submitted no later than

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batch vapor or in-line solvent cleaning machines complying with the alternate standards in 40 CFR 63.464 are required to submit an initial statement of compliance to the Administrator (40 CFR 63.468(e)).	150 days after 2 December 1997. Verify that, for new sources, the report is submitted no later than 150 days after startup or 1 May 1995, whichever is later. Verify that the report includes: – the name and address of the owner or operator – the address (i.e., physical location) of the solvent cleaning machine – the solvent/air interface area for cleaning machines without a solvent/air interface, a description of the method used to determine the cleaning capability and the results – the results of the first 3 mo average emissions calculation.
A.118.6. Operators of batch vapor or in-line solvent cleaning machines are required to submit an annual report by 1 February of the year following the one for which the report is being made and a solvent emissions report(40 CFR 63.468 (f) and 63.468(g)).	Verify that operators of batch vapor or in-line solvent cleaning machines are required to submit an annual report by 1 February of the year following the one for which the report is being made. Verify that the annual report includes the following: – a signed statement from the owner or his designee stating that "All operators of solvent cleaning machines have received training on the proper operation of solvent cleaning machines and their control devices sufficient to pass the test in 40 CFR 63.463(d)(10)" – an estimate of solvent consumption for each solvent cleaning machine during the reporting period. Verify that the solvent emission report is submitted yearly and includes the following information: – the size and type of each unit (solvent/air interface area or cleaning capacity – the average monthly solvent consumption for the solvent cleaning machine in kg/mo – the 3 mo rolling average solvent emission estimates calculated each month. (NOTE: The annual report and the solvent emissions report can be combined into a single report.)
A.118.7. Exceedances from batch vapor or in-	(NOTE: This applies to the control techniques outlined in 40 CFR

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line solvent cleaning machines are required to be reported (40 CFR 63.463(e)(3), 63.468(h), and 63.468 (i)).	63.463(e)(2), see checklist item A.117.5.) Verify that all exceedances are reported to the Administrator semiannually except when required more frequently as determined by the administrator. Verify that, once an exceedance has occurred, quarterly reporting is done until a request to reduce reporting is approved. Verify that reports are delivered or postmarked by the 30th day following the end of each calendar half or quarter as appropriate. Verify that exceedance reports include the following information: – actions taken to comply with monitoring and performance test requirements, including records of written or verbal orders for replacement parts, a description of repairs made, and additional monitoring conducted to demonstrate compliance – if an exceedance has occurred, the reason for the exceedance and a description of the actions taken – if no exceedance has occurred and no equipment has been inoperative or out of control, repaired, or adjusted, such information is stated in the report. (NOTE: Quarterly reporting may be reduced if there has not been an exceedance for a year, all recordkeeping and monitoring requirements are being met, and the Administrator does not object.) (NOTE: An exceedance has occurred if: – a reduced room draft is used to achieve compliance and operating conditions under which the wind speed was demonstrated to be 15.2 m/min (50 ft/min) or less have not been established and maintained – a working mode cover is used to achieve compliance and the cover is open for more than just part entrance and removal or it does not completely cover the cleaning machine openings when closed – an idling mode cover is used to achieve compliance and the cover is not in place whenever parts are not in the solvent cleaning machine and it does not completely covers the cleaning machine openings when in place – dwell is used to achieve compliance and neither of the following are done: – the appropriate dwell time is determined for each part or parts basket or the maximum dwell time – after cleaning, each part is held in the freeboard area above the vapor zone for the dwell time necessary

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	– a superheated vapor system is used to achieve compliance and: – the manufacturers specifications for determining the minimum proper dwell time are not followed – the parts do not remain within the superheated vapor for at least the minimum proper dwell time – a carbon adsorber in conjunction with a lip exhaust is used to achieve compliance and: – the carbon adsorber bed is bypassed during desorption – the lip exhaust is not located above the solvent cleaning machine cover so that the cover closes below the lip exhaust level.) (NOTE: An exceedance has also occurred if the following conditions exist and they have not been corrected within 15 days of detection: – freeboard refrigeration devices are used and the chilled air blanket temperature measured at the center of the air blanket is greater than 30 percent of the solvents boiling point – a reduced room draft is used to achieve compliance and the flow or movement of air across the top of the freeboard area of the solvent cleaning machine closure does exceeds 15.2 m/min (50 ft/min) at any time – a working mode cover is used to achieve compliance and it has cracks, holes, or other defects – an idling mode cover is used to achieve compliance and it has cracks, holes, or other defects – a superheated vapor system is used to achieve compliance and the temperature of the vapor at the center of the superheated vapor is at less than 10 °F above the solvents boiling point – a carbon adsorber in conjunction with a lip exhaust is used to achieve compliance, and the concentration of the organic solvent in the exhaust exceeds 100 ppm of any halogenated HAP compound.)

Appendix 1-1

Mandatory Class I Air Quality Areas Under Service Jurisdiction (563 FW 2, Exhibit 1)

Wilderness Area	National Wildlife Refuge
Bering Sea	Alaska Maritime
Simeonof	Alaska Maritime
Tuxedni	Alaska Maritime
Chassahowitzka	Chassahowitzka
St. Marks	St. Marks
Okefenokee	Okefenokee
Wolf Island	Savannah Coastal
Breton	Bogue Chitto
Moosehorn	Moosehorn
Seney	Seney
Mingo	Mingo
Medicine Lake	Medicine Lake
Red Rock Lakes	Red Rock Lakes
UL Bend	Charles M. Russell
Brigantine	Edwin B. Forsythe
Bosque Del Apache	Bosque Del Apache
Salt Creek	Salt Creek
Swanquarter	Mattamuskeet
Lostwood	Lostwood
Wichita Mountains	Wichita Mountains
Cape Romain	Cape Romain

Appendix 1-1a

RMP Substances Threshold List
(40 CFR 68.130, Table 1 through 3)

Toxic Substances
Threshold Quantity = 500 lb – Hydrogen selenide – Phosgene (carbonic dichloride)
Threshold Quantity = 1,000 lb – Arsine – Chlorine dioxide (Chlorine oxide) – Chloromethyl ether – Fluorine – Hydrogen fluoride (Hydrofluoric acid) $\geq$ 50% concentration – Nickel carbonyl (Nickel tetracarbonyl)
Threshold Quantity = 2,500 lb – Chlorine – Diborane – Hydrocyanic acid – Iron, pentacarbonyl- – Sulfur tetrafluoride – Titanium tetrachloride
Threshold Quantity = 5,000 lb – Acrolein – Acrylyl chloride – Boron trichloride – Chloromethyl ethyl ether – Dimethyldichlorosilane – Furan – Hydrogen chloride, anhydrous (Hydrochloric acid) – Methyl chloroformate (Carbonochloridic acid) – Methyltrichlorosilane – Phosphine – Phosphorous oxychloride (phosphoryl chloride) – Sulfur dioxide (anhydrous)
Threshold Quantity = 10,000 lb – Allylamine – Ammonia (anhydrous) – Bromine – Cyanogen chloride – Ethyleneimine (Aziridine) – Ethylene oxide (Oxirane) – Hydrogen sulfide

Toxic Substances
– Methacrylonitrile – Methyl chloride (Chloromethane) – Methyl isocyanate – Methyl mercaptan – Nitric oxide (Nitrogen oxide) – Oleum (fuming sulfuric acid) – Peracetic acid – Perchloromethylmercaptan – Propionitrile – Propyleneimine – Propylene oxide – Sulfur trioxide – Tetramethyllead – Tetranitromethane – Toluene 2,4-diisocyanate
Threshold Quantity = 15,000 lb – Allyl alcohol – Arsenous trichloride – Boron trifluoride compound with methyl ether – Cyclohexylamine – 1,1-Dimethylhydrazine Formaldehyde (solution) – Hydrazine – Hydrochloric acid ($\geq$ 30%) – Isopropyl chloroformate – Methyl hydrazine – Nitric acid ($\geq$ 80%) – Phosphorous trichloride – Piperidine – Propyl chloroformate – Vinyl acetate monomer
Threshold Quantity = 20,000 lb – Acrylonitrile – Ammonia ($\geq$ 20%) – Carbon disulfide – Chloroform – Crotonaldehyde – Epichlorohydrin – Ethylenediamine – Isobutyronitrile – Methyl thiocyanate – Toluene 2,6-diisocyanate – Toluene diisocyanate (unspecified isomer) – Trimethylchlorosilane

Appendix 1-1b

Emission Limits for Small, Medium, and Large HMIWI (40 CFR Subpart Ec, Table 1) [December 1997]

Pollutant	Units (7 percent oxygen, dry basis)	Emission Limits		
		HMIWI size		
		Small	Medium	Large
Particulate matter	Milligrams per dry standard cubic meter (grains per dry standard cubic foot)	69 (0.03)	34 (0.015)	34 (0.015)
Carbon monoxide	Parts per million by volume	40	40	40
Dioxins/furans	Nanograms per dry standard cubic meter total dioxins/furans (grains per billion dry standard cubic feet) or nanograms per dry standard cubic meter total dioxins/furans TEQ (grains per billion dry standard cubic feet).	125 (55) or 2.3 (1.0)	25 (11) or 0.6 (0.26)	25 (11) or 0.6 (0.26)
Hydrogen chloride	Parts per million or percent reduction	15 or 99%	15 or 99%	15 or 99%
Sulfur dioxide	Parts per million by volume	55	55	55
Nitrogen oxides	Parts per million by volume	250	250	250
Lead	Milligrams per dry standard cubic meter (grains per thousand dry standard cubic feet) or percent reduction	1.2 (0.52) or 70%	0.07 (0.03) or 98%	0.07 (0.03) or 98%
Cadmium	Milligrams per dry standard cubic meter (grains per thousand per dry standard cubic feet) or percent reduction	0.16 (0.07) or 65%	0.04 (0.02) or 90%	0.04 (0.02) or 90%
Mercury	Milligrams per dry standard cubic meter (grains per thousand dry standard cubic feet) or percent reduction.	0.55 (0.24) or 85%	0.55 (0.24) or 85%	0.55 (0.24) or 85%

Appendix 1-1c

Operating Parameters for HMIWIs To Be Monitored and Minimum Measurement and Recording Frequencies (40 CFR Subpart Ec, Table 3) [December 1997]

Operating parameters to be monitored	Minimum frequency		Control System		
	Data measure-ment	Data recording	Dry scrubber followed by fabric filter	Wet scrubber	Dry scrubber followed by fabric filter and wet scrubber
Maximum operating parameters:					
Maximum charge rate	Continuous	1xhour	x	x	x
Maximum fabric filter inlet temperature	Continuous	1xminute	x		x
Maximum flue gas temperature	Continuous	1xminute	x	x	
Minimum operating parameter:					
Minimum secondary chamber temp.	Continuous	1xminute	x	x	x
Minimum dioxin/furan sorbent flow rate	Hourly	1xhour	x		x
Minimum HCl sorbent flow rate	Hourly	1xhour	x		x
Minimum mercury (Hg) sorbent flow rate	Hourly	1xhour	x		x
Minimum pressure drop across the Wet scrubber or minimum horse-power or amperage to wet scrubber	Continuous	1xminute		x	x
Minimum scrubber liquor flow rate	Continuous	1xminute		x	x
Minimum scrubber liquor pH	Continuous	1xminute		x	x

Appendix 1-1d

Contents of the RMP
(40 CFR 68.155 through 68.185)
[Added July 1999]

Executive Summary - This includes a brief description of the following elements:

a) the accidental release prevention and emergency response policies at the stationary source;
b) the stationary source and regulated substances handled;
c) the worst-case release scenario(s) and the alternative release scenario(s), including administrative controls and mitigation measures to limit the distances for each reported scenario;
d) the general accidental release prevention program and chemical-specific prevention steps;
e) the 5-yr accident history;
f) the emergency response program; and
g) planned changes to improve safety.

Registration Form - This covers all regulated substances handled in covered processes iand includes the following data:

a) stationary source name, street, city, county, state, zip code, latitude, and longitude;
b) the stationary source Dun and Bradstreet number;
c) name and Dun and Bradstreet number of the corporate parent company;
d) the name, telephone number, and mailing address of the owner or operator;
e) the name and title of the person or position with overall responsibility for RMP elements and implementation;
f) the name, title, telephone number, and 24-h telephone number of the emergency contact;
g) for each covered process, the name and CAS number of each regulated substance held above the threshold quantity in the process, the maximum quantity of each regulated substance or mixture in the process (in pounds) to two significant digits, the SIC code, and the Program level of the process;
h) the stationary source EPA identifier;
i) the number of full-time employees at the stationary source;
j) whether the stationary source is subject to 29 CFR 1910.119;
k) whether the stationary source is subject to 40 CFR part 355;
l) whether the stationary source has a CAA Title V operating permit; and
m) the date of the last safety inspection of the stationary source by a Federal, state, or local government agency and the identity of the inspecting entity.

Offsite consequence analysis - This is requird in the following situations:

a) one worst-case release scenario for each Program 1 process; and
b) for Program 2 and 3 processes, one worst-case release scenario to represent all regulated toxic substances held above the threshold quantity and one worst-case release scenario to represent all regulated flammable substances held above the threshold quantity. If additional worst-case scenarios for toxics or flammables are required by 40 CFR 68.25(a)(2)(iii), the owner or operator submits the same information on the additional scenario(s). The owner or operator of Program 2 and 3 processes also submits information on one alternative release scenario for each regulated toxic substance held above the threshold quantity and one alternative release scenario to represent all regulated flammable substances held above the threshold quantity.

When submitting an offsite consequence analysis, it is required to contain the following information chemical name;

a) physical state (toxics only)
b) basis of results (give model name if used)

c) scenario (explosion, fire, toxic gas release, or liquid spill and vaporization)
d) quantity released in pounds
e) release rate
f) release duration
g) wind speed and atmospheric stability class (toxics only)
h) topography (toxics only)
i) distance to endpoint
j) public and environmental receptors within the distance
k) passive mitigation considered; and
l) active mitigation considered (alternative releases only).

Five-year Accident History.

Prevention Program/Program 2 - For each Program 2 process, the owner or operator shall provide in the RMP the folowing information. If the same information applies to more than one covered process, the owner or operator may provide the information only once, but shall indicate to which processes the information applies.

a) the SIC code for the process
b) the name(s) of the chemical(s) covered
c) the date of the most recent review or revision of the safety information and a list of Federal or state regulations or industry-specific design codes and standards used to demonstrate compliance with the safety information requirement
d) the date of completion of the most recent hazard review or update
   - the expected date of completion of any changes resulting from the hazard review
   - major hazards identified
   - process controls in use
   - mitigation systems in use
   - monitoring and detection systems in use; and
   - changes since the last hazard review
e) the date of the most recent review or revision of operating procedures
f) the date of the most recent review or revision of training programs
   - the type of training provided--classroom, classroom plus on the job, on the job; and
   - the type of competency testing used
g) the date of the most recent review or revision of maintenance procedures and the date of the most recent equipment inspection or test and the equipment inspected or tested
h) the date of the most recent compliance audit and the expected date of completion of any changes resulting from the compliance audit
i) the date of the most recent incident investigation and the expected date of completion of any changes resulting from the investigation
j) the date of the most recent change that triggered a review or revision of safety information, the hazard review, operating or maintenance procedures, or training.

Prevention Program/Program 3 - For each Program 3 process, the owner or operator shall provide the following information. If the same information applies to more than one covered process, the owner or operator may provide the information only once, but shall indicate to which processes the information applies.

a) the SIC code for the process
b) the name(s) of the substance(s) covered
c) the date on which the safety information was last reviewed or revised
d) the date of completion of the most recent PHA or update and the technique used
   - the expected date of completion of any changes resulting from the PHA
   - major hazards identified
   - process controls in use

- mitigation systems in use
- monitoring and detection systems in use; and
- changes since the last PHA

e) the date of the most recent review or revision of operating procedures
f) the date of the most recent review or revision of training programs
   - the type of training provided--classroom, classroom plus on the
   - job, on the job; and
   - the type of competency testing used.
g) the date of the most recent review or revision of maintenance procedures and the date of the most recent equipment inspection or test and the equipment inspected or tested
h) the date of the most recent change that triggered management of change procedures and the date of the most recent review or revision of management of change procedures
i) the date of the most recent pre-startup review
j) the date of the most recent compliance audit and the expected date of completion of any changes resulting from the compliance audit
k) the date of the most recent incident investigation and the expected date of completion of any changes resulting from the investigation
l) the date of the most recent review or revision of employee participation plans
m) the date of the most recent review or revision of hot work permit procedures
n) the date of the most recent review or revision of contractor safety procedures; and
o) the date of the most recent evaluation of contractor safety performance.

Emergency Response Program - The owner or operator shall provide in the RMP the following information:

a) whether there is a written emergency response plan with the following information:
   - specific actions to be taken in response to an accidental releases of a regulated substance?
   - procedures for informing the public and local agencies responsible for responding to accidental releases
   - information on emergency health care
b) the date of the most recent review or update of the emergency response plan;
c) the date of the most recent emergency response training for employees.
d) tthe name and telephone number of the local agency with which the plan is coordinated.
e) other Federal or state emergency plan requirements to which the stationary source is subject.

Certification - For Program 1 processes, the owner or operator shall submit in the RMP the certification statement provided in 40 CFR 68.12(b)(4). For all other covered processes, the owner or operator shall submit in the RMP a single certification that, to the best of the signer's knowledge, information, and belief formed after reasonable inquiry, the information submitted is true, accurate, and complete.

Appendix 1-2

Reid Vapor Pressure for Installation Geographic Area (40 CFR 80.27)

State	May	June	July	August	September
Alabama	9.0	7.8	7.8	7.8	7.8
Arizona	9.0	7.8	7.8	7.8	7.8
Arkansas	9.0	7.8	7.8	7.8	7.8
California	9.0	7.8	7.8	7.8	7.8
Colorado*	9.0	7.8	7.8	7.8	7.8
Connecticut	9.0	9.0	9.0	9.0	9.0
Delaware	9.0	9.0	9.0	9.0	9.0
District of Columbia	9.0	7.8	7.8	7.8	7.8
Florida	9.0	7.8	7.8	7.8	7.8
Georgia	9.0	7.8	7.8	7.8	7.8
Idaho	9.0	9.0	9.0	9.0	9.0
Illinois	9.0	9.0	9.0	9.0	9.0
Indiana	9.0	9.0	9.0	9.0	9.0
Iowa	9.0	9.0	9.0	9.0	9.0
Kansas	9.0	7.8	7.8	7.8	7.8
Kentucky	9.0	9.0	9.0	9.0	9.0
Louisiana	9.0	7.8	7.8	7.8	7.8
Maine	9.0	9.0	9.0	9.0	9.0
Maryland	9.0	7.8	7.8	7.8	7.8
Massachusetts	9.0	9.0	9.0	9.0	9.0
Michigan	9.0	9.0	9.0	9.0	9.0
Minnesota	9.0	9.0	9.0	9.0	9.0
Mississippi	9.0	7.8	7.8	7.8	7.8
Missouri	9.0	7.8	7.8	7.8	7.8
Montana	9.0	9.0	9.0	9.0	9.0
Nebraska	9.0	9.0	9.0	9.0	9.0
Nevada	9.0	7.8	7.8	7.8	7.8
New Hampshire	9.0	9.0	9.0	9.0	9.0
New Jersey	9.0	9.0	9.0	9.0	9.0
New Mexico	9.0	7.8	7.8	7.8	7.8
New York	9.0	9.0	9.0	9.0	9.0
North Carolina	9.0	7.8	7.8	7.8	7.8
North Dakota	9.0	9.0	9.0	9.0	9.0
Ohio	9.0	9.0	9.0	9.0	9.0
Oklahoma	9.0	7.8	7.8	7.8	7.8
Oregon	9.0	7.8	7.8	7.8	7.8
Pennsylvania	9.0	9.0	9.0	9.0	9.0
Rhode Island	9.0	9.0	9.0	9.0	9.0
South Carolina	9.0	7.8	7.8	7.8	7.8
South Dakota	9.0	9.0	9.0	9.0	9.0
Tennessee					
Knox County	9.0	9.0	9.0	9.0	9.0
All other volatility nonattainment areas	9.0	7.8	7.8	7.8	7.8
Texas	9.0	7.8	7.8	7.8	7.8
Utah	9.0	7.8	7.8	7.8	7.8
Vermont	9.0	9.0	9.0	9.0	9.0

State	May	June	July	August	September
Virginia	9.0	7.8	7.8	7.8	7.8
Washington	9.0	9.0	9.0	9.0	9.0
West Virginia	9.0	9.0	9.0	9.0	9.0
Wisconsin	9.0	9.0	9.0	9.0	9.0
Wyoming	9.0	9.0	9.0	9.0	9.0

*** The standard for 1992 through 1997 in the Denver-Boulder nonattainment area will be 9.0 for 1 June through 15 September.**

[1] Standards are expressed in psi.

Appendix 1-3

Controlled Substances and Ozone Depletion Weights (40 CFR 82, Appendix A and Appendix B)

Controlled Substance	Ozone Depletion Potential (ODP) Weight
Class I	
Group I	
$CFC1_3$ - Trichlorofluoromethane (CFC-11)	1.0
CF_2C1_2 - Dichlorodifluoromethane (CFC-12)	1.0
$C_2F_3C1_3$ - Trichlorotrifluoroethane (CFC-113)	0.8
$C_2F_4C1_2$ - Dichlorotetrafluoroethane (CFC-114)	1.0
C_2F_5C1 - (Mono)chloropentafluoroethane (CFC-115)	0.6
All isomers of the above chemicals	
Group II	
CF_2C1Br - Bromochlorodifluoromethane (Halon 1211)	3.0
CF_3Br - Bromotrifluoromethane (Halon 1301)	10.0
$C_2F_4Br_2$ - Dibromotetrafluoroethane (Halon 2402)	6.0
All isomers of the above chemicals	
Group III	
CF_3C1 - Chlorotrifluoromethane (CFC-13)	1.0
C_2FC1_5 - (CFC-111)	1.0
$C_2F_2C1_4$ - (CFC-112)	1.0
C_3FC1_7 - (CFC-211)	1.0
$C_3F_2C1_6$ - (CFC-212)	1.0
$C_3F_3Cl_5$ - (CFC-213)	1.0
$C_3F_4C1_4$ - (CFC-214)	1.0
$C_3F_5C1_3$ - (CFC-215)	1.0
$C_3F_6C1_2$ - (CFC-216)	1.0

Controlled Substance	Ozone Depletion Potential (ODP) Weight
C_3F_7C1 - (CFC-217)	1.0
All isomers of the above chemicals	
Group IV	
$CC1_4$ - Carbon Tetrachloride	1.1
Group V	
$C_2H_3Cl_3$-1,1,1-Trichloroethane (Methyl Chloroform	0.1
All isomers of the above chemicals, except 1,1,2-trichloroethane	
Group VI	
CH_3Br - Bromomethane (Methyl Bromide)	0.7
Group VII	
$CHFBr_2$	1.00
CHF_2Br (HBFC-2201)	0.74
CH_2FBr	0.73
C_2HFBr_4	0.3 - 0.8
$C_2HF_2Br_3$	0.5 - 1.8
$C_2HF_3Br_2$	0.4 - 1.6
C_2HF_4Br	0.7 - 1.2
$C_2H_2FBr_3$	0.1 - 1.1
$C_2H_2F_2Br_2$	0.2 - 1.5
$C_2H_2F_3Br$	0.7 - 1.6
$C_2H_3FBr_2$	0.1 - 1.7
$C_2H_3F_2Br$	0.2 - 1.1
C_2H_4FBr	0.07 - 0.1
C_3HFBr_6	0.3 - 1.5

Controlled Substance	Ozone Depletion Potential (ODP) Weight
$C_3HF_2Br_5$	0.2 - 1.9
$C_3HF_3Br_4$	0.3 - 1.8
$C_3HF_4Br_3$	0.5 - 2.2
$C_3HF_5Br_2$	0.9 - 2.0
C_2HF_6Br	0.7 - 3.3
$C_3H_2FBr_5$	0.1 - 1.9
$C_3H_2F_2BR_4$	0.2 - 2.1
$C_3H_2F_3Br_3$	0.2 - 5.6
$C_3H_2F_4Br_2$	0.3 - 7.5
$C_3H_2F_5BR$	0.9 - 1.4
$C_3H_3FBr_4$	0.08 - 1.9
$C_3H_3F_2Br_3$	0.1 - 3.1
$C_3H_3F_3Br_2$	0.1 - 2,5
$C_3H_3F_4Br$	0.3 - 4.4
$C_3H_4FBr_3$	0.03 - 0.3
$C_3H_4F_2Br_2$	0.1 - 1.0
$C_3H_4F_3Br$	0.07 - 0.8
$C_3H_5FBr_2$	0.04 - 0.4
$C_3H_5F_2Br$	0.07 - 0.8
C_3H_6FBr	0.02 - 0.7
Class II	
$CHFCl_2$ - Dichlorofluoromethane (HCFC-21)	*[res.]
CHF_2Cl - Chlorodifluoromethane (HCFC-22)	0.05
CH_2FCl - Chlorofluoromethane (HCFC-31)	[res.]
C_2HFCl_4 - (HCFC-121)	[res.]
$C_2HFCl_2Cl_3$ - (HCFC-122)	[res.]

Controlled Substance	Ozone Depletion Potential (ODP) Weight
$C_2HF_3Cl_2$ - (HCFC-123)	0.02
C_2HF_4Cl - (HCFC-124)	0.02
$C_2H_2FCl_3$ - (HCFC-131)	[res.]
$C_2H_2F_2Cl_2$ - (HCFC-132b)	[res.]
$C_2H_2F_2Cl$ - (HCFC-133a)	[res.]
$C_2H_3FCl_2$ - (HCFC-141b)	0.12
$C_2H_3F_2Cl$ - (HCFC-142b)	0.06
C_3HFCl_6 - (HCFC-221)	[res.]
$C_3HF_2Cl_5$ - (HCFC-222)	[res.]
$C_3HF_3Cl_4$ - (HCFC-223)	[res.]
$C_3HF_4Cl_3$ - (HCFC-224)	[res.]
$C_3HF_5Cl_2$ - (HCFC-225ca)	[res.]
$C_3HF_5C1_2$ (HCFC-225cb)	[res.]
C_3HF_6Cl - (HCFC-226)	[res.]
$C_3H_2FCl_5$ - (HCFC-231)	[res.]
$C_3H_2F_2Cl_4$ - (HCFC-232)	[res.]
$C_3H_2F_3Cl_3$ - (HCFC-233)	[res.]
$C_3H_2F_4Cl_2$ - (HCFC-234)	[res.]
$C_3H_2F_5Cl$ - (HCFC-235)	[res.]
$C_3H_3FCl_4$ - (HCFC-241)	[res.]
$C_3H_3F_2Cl_3$ - (HCFC-242)	[res.]
$C_3H_3F_3Cl_2$ - (HCFC-243)	[res.]
$C_3H_3F_4Cl$ - (HCFC-244)	[res.]
$C_3H_4FCl_3$ - (HCFC-251)	[res.]
$C_3H_4F_2Cl_2$ - (HCFC-252)	[res].
$C_3H_4F_3Cl$ - (HCFC-253)	[res.]

Controlled Substance	Ozone Depletion Potential (ODP) Weight
$C_3H_5FCl_2$ - (HCFC-261)	[res.]
$C_3H_5F_2Cl$ - (HCFC-262)	[res.]
C_3H_6FCl - (HCFC-271)	[res.]
All isomers of the above chemicals	[res.]

***[res.] means reserve. It designates that the ozone depletion weight number has been reserved for a future rating.**

Appendix 1-4

Required Levels of Evacuation for Appliances (Except for Small Appliances, MVACS, and MVAC-like appliances) (40 CFR 82.156, Table 1)

Type of Appliance	Using recovery or recycling equipment manufactured or imported before 15 November 1993	Using recovery or recycling equipment manufactured or imported on or after 15 November 1993
HCFC-22 appliance, or isolated component of such appliance, normally containing less than 200 lb of refrigerant	0	0
HCFC-22 appliance, or isolated component of such appliance, normally containing less than 200 lb of refrigerant	0	0
HCFC-22 appliance, or isolated component of such appliance, normally containing 200 lb or more of refrigerant	4	10
Other high-pressure appliance, or isolated component of such appliance, normally containing less than 200 lb of refrigerant	4	10
Other high-pressure appliance, or isolated component of such appliance, normally containing 200 lb or more of refrigerant	4	15
Very high-pressure appliance	0	0
Low-pressure appliance	25	25 mm Hg absolute

Appendix 1-5

Emission Limits for Cleaning Machines Without a Solvent/Air Interface (40 CFR 63.464(a)(2)(ii)(A))

Equation 1

$$EL = 330*(Vol)^{0.6} \quad (1)$$

EL = the 3 mo rolling average monthly emissions limit (kg/mo)

Vol = the cleaning capacity of the solvent cleaning machine (m^3)

Table 1

Cleaning Capacity (m^3)	3-mo rolling average monthly emission limit (kg/mo)
0.00	0
0.05	55
0.10	83
0.15	106
0.20	126
0.25	144
0.30	160
0.35	176
0.40	190
0.45	204
0.50	218
0.55	231
0.60	243
0.65	255
0.70	266

Cleaning Capacity (m^3)	3-mo rolling average monthly emission limit (kg/mo)
0.75	278
0.80	289
0.85	299
0.90	310
0.95	320
1.00	330
1.05	340
1.10	349
1.15	359
1.20	368
1.25	377
1.30	386
1.35	395
1.40	404
1.45	412
1.50	421
1.55	429
1.60	438
1.65	446
1.70	454
1.75	462
1.80	470
1.85	477
1.90	485
1.95	493

Cleaning Capacity (m^3)	3-mo rolling average monthly emission limit (kg/mo)
2.00	500
2.05	508
2.10	515
2.15	522
2.20	530
2.25	537
2.30	544
2.35	551
2.40	558
2.45	565
2.50	572
2.55	579
2.60	585
2.65	592
2.70	599
2.75	605
2.80	612
2.85	619
2.90	625
2.95	632

SECTION 2

DRINKING WATER MANAGEMENT

U.S. ECAH, September 1999

A. Applicability

This section identifies rules, regulations, and requirements for any FWS facility that has jurisdiction over any public water supply system. A public water system is defined as a system for providing piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. This term includes:

1. any collection, treatment, storage, and distribution facilities under control of the operator of such system
2. any collection or pretreatment storage facility not under such control that is used primarily in connection with such system.

A public water system is either a community water system or a noncommunity water system (40 CFR 141.2).

FWS facilities that meet all the criteria listed below are not required to comply with the requirements of the *Safe Drinking Water Act* (SDWA) since, by definition, they are not public water systems (40 CFR 141.3):

1. system consists only of distribution and storage facilities and does not have any collection and treatment facilities
2. facility gets all of its water from a public water system that is owned or operated by another party (non-FWS)
3. facility does not sell water to any party.

B. Federal Legislation

- *The Safe Drinking Water Act* (SDWA). This act, Public Law (PL) 99-339, 42 U.S. Code (USC) 201, 300f-300j-25, 6939b, 6979a, 6979b, 7401--742, etc., is the Federal legislation which regulates the safety of drinking water in the country. Each department, agency, and instrument of the executive, legislative, and judicial branches of the Federal Government having jurisdiction over any potential source of contaminants identified by a state program must be subject to and observe all requirements of the state program applicable to such potential source of contaminants, both substantive and procedural, in the same manner, and to the same extent, as any other person, including payment of reasonable charges and fees (42 USC 300h-7(h)).

  If a Federal agency has jurisdiction over any Federally owned or maintained public water system, or is engaged in any activity resulting, or which may result in, underground water injection which endangers drinking water, it is subject to, and must observe, any Federal, state, and local regulations, administrative authorities, and process and sanctions respecting the provision of safe drinking water and respecting any underground injection program in the same manner, and to the same extent, as any nongovernmental entity. This requirement applies (42 USC 300j-6(a)):

  1. to any rules substantive or procedural (including any recordkeeping or reporting, permits, and other requirements)
  2. to the exercise of any Federal, state, or local authorities
  3. to any process or sanction, whether enforced in Federal, state, or local courts or in any other manner.

National primary drinking water regulations apply to each public water system in each state. However, such regulations do not apply to a public water system (42 USC 300g):

1. which consists only of distribution and storage facilities (and does not have any collection and treatment facilities)
2. which obtains all its water from, but is not owned or operated by, a public water system to which such regulations apply
3. which does not sell water to any person
4. which is not a carrier which conveys passengers in interstate commerce.

Each department, agency, or instrument of the executive, legislative, and judicial branches of the Federal Government, and each officer, agent, or employee of such organization, must comply with all Federal, state, interstate, and local requirements, administrative authority, and process and sanctions regarding the control and abatement of water pollution in the same manner and to the same extent as any nongovernmental entity including the payment of reasonable service charges (33 USC 1323(a)).

As a provision of the *Safe Drinking Water Act Amendments of 1996,* states are allowed to grant small systems (serving a population of no more than 10,000) a variance if they cannot afford to comply. The amendments expressly waive sovereign immunity for Federal agencies, including immunity from punitive and coercive fines and penalties relating to the provision of safe drinking water or underground injection. The amendments do not subject any Federal department or agency to criminal sanctions but does subject Federal agents and employees to criminal sanctions.

- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards.* This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

- Federal regulations used to develop the checklist include:

    - EO 12088, *Federal Compliance with Pollution Control Standards.*
    - 40 CFR 141, *National Primary Drinking Water Regulations.*
    - 40 CFR 142, *National Primary Drinking Water Regulations Implementation.*
    - 40 CFR 149, *Sole Source Aquifers.*

C. State/Local Regulations

States have primary responsibility to enforce compliance with national primary drinking water standards and sampling, monitoring, and notice requirements in conformance with 40 CFR 141. U.S. Environmental Protection Agency (USEPA) executes the enforcement responsibilities until individual state programs are approved.

States that have primacy may establish drinking water regulations, monitoring schedules, and reporting requirements more stringent than, or in addition to, those in the Federal regulations. FWS public water systems in these states are required to comply with these additional requirements. Generally speaking, most states who have primacy adopt drinking water regulations which closely reflect the Federal requirements. Almost all states have achieved

authorization from USEPA to administer drinking water compliance programs including underground injection control (UIC) programs.

D. FWS/DOI Manuals

- 561 FW 4, *Compliance Requirements, Safe Drinking Water Act*. This chapter, dated 13 January 1997, provides policy and instructions for complying with the SDWA at Service facilities.

E. Key Compliance Requirements

- Service Drinking Water Systems - Service controlled water supply systems with water available for human consumption, regardless of the size of the system or the frequency or duration of use are required to monitor for coliforms, nitrates, nitrites, lead, and copper. Additionally, they will monitor for all other contaminants every 6 yr. Every Service controlled water supply system will monitor for nitrate, nitrite, lead, copper, and coliforms, But, for a water supply system supplied from groundwater sources, the Service monitoring requirements can be satisfied if monitoring results from another water supply system can be obtained, provided the system is located within 15-mi downgradient, the water comes from the same aquifer, the analysis was performed by a certified lab, and copies of the analysis are maintained at the Service facility.

- Plans and Records - The drinking water facility manager must keep records of actions taken to correct or repair any part of the treatment and distribution system for at least 3 yr. Records of chemical analyses are required to be kept for not less than 10 yr. Facilities are required to survey public water systems and maintain records of those reviews. Bacteriological records are required to be kept for 5 yr (MP, 40 CFR 141.21(d), 141.33(a), and 141.33(b)).

- Physical Requirements for Drinking Water Systems - All water systems shall install and operate optimal corrosion control treatment and/or comply with corrosion control requirements specified by the state (40 CFR 141.80(d)).

- Maximum Contaminant Level (MCL) Standards - Drinking water is to be supplied from sources approved by Federal, state, or local health authorities, or treated to specific standards. Community water systems, noncommunity water systems, except as defined under exempted water systems, and nontransient, noncommunity water systems are required to meet specific MCLs and action levels for organic, inorganic, turbidity, and microbiological contaminants. These are outlined in Appendices 2-1 and 2-2 (40 CFR 141.11(a), 141.11(b), 141.11(d), 141.12, 141.15, 141.16(a), and 141.60 through 141.63).

- Monitoring - The monitoring schedule and what constituents are to be monitored are based on what type of drinking water facility is being operated. Facilities with community water systems and/or nontransient, noncommunity water systems are required to monitor for inorganic contaminants. All public water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels. Monitoring for Endrin is required to be done according to specific schedules. Community and noncommunity water systems are required to monitor for total coliforms and facilities are required to monitor for radioactivity in community water systems. Facilities with community water systems that add a disinfectant to the water are required to analyze for total trihalomethanes (TTHMs) (40 CFR 141.21(a), 141.23, 141.24, and 141.26).

- Total Coliform and Turbidity Sampling - Total coliform samples are required to be collected at regular intervals throughout the month except at systems that use only groundwater and serve 4900 people or fewer. These systems are exempt from sampling at regular intervals but are required to still sample. Public water systems that use surface water or groundwater under the

direct influence of surface water and do not practice filtration are required to collect at least one total coliform sample near the first service connection each day the turbidity level of the source water exceeds 1 NTU. When a routine sample is total coliform-positive, the public water system must collect a set of repeat samples within 24 h of being notified of the positive result. Sampling for turbidity is required to be done at public water systems that use water obtained in whole or part from surface water sources according to a specific schedule and any excesses reported (40 CFR 141.21 and 141.22).

- Water Analysis - Suppliers of water for community public water systems are required to analyze for sodium and collect samples from representative entry points to the water distribution system and analyze for corrosivity. All analysis of samples used to determine compliance with MCLs must be performed in a state-approved lab or by a state-approved individual (40 CFR 141.28, 141.30, 141.41, and 141.42).

- Filtration and Disinfection - Public water system that use surface water sources or groundwater sources under direct influence of a surface water source, must provide filtration as a treatment technique for microbiological contaminants which meets specific standards, provide disinfection treatment by 29 June 1993, and report specific information monthly to the state. Subpart H systems serving at least 10,000 people must provide filtration starting 17 December 2001. Subpart H systems serving at least 10,000 people which are providing disinfection must perform disinfection profiling and benchmarking by 17 December 2001. Community water systems that perform disinfection are required to meet specific MCLs and MRDLs, analyze for TTHM, and monitor for disinfection byproducts, disinfection byproduct precursors, and disinfection residuals. Noncommunity water systems that perform disinfection are required to meet specific MCLs and MRDLs, and monitor for disinfection byproducts, disinfection byproduct precursors, and disinfection residuals. (40 CFR 141.30, 141.64 and 141.65, 141.70 and 141.72, 141.130 through 141.132, 141.171 and 141.173) **[Revised January 1999]**.

- Notification and Reporting Requirements - When primary drinking water standards are exceeded, public notifications must be made. Facilities that operate public water systems must send reports to the state on any failure to comply with the applicable biological, turbidity, radioactivity, and chemical standards, and on any failure to comply with monitoring requirements that apply (40 CFR 141.31, and 141.32).

- Lead and Copper in Drinking Water Systems - Facilities with community or nontransient, noncommunity water systems must notify their users about lead in drinking water systems and must meet specific standards for lead and copper action levels and reporting requirements when these levels are exceeded. Facilities with water systems exceeding the lead action level after the implementation of corrosion control and source water treatment requirements are required to replace lead service lines. Monitoring for lead and copper is required to start on a specified date, and be performed at a specified number of sites. The facility is required to fulfill specific reporting requirements and retain onsite all the original records of sampling data, analysis, reports, surveys, letters, evaluations, state determinations, and any other pertinent documents for at least 12 yr (40 CFR 141.80 through 141.91).

F. Key Compliance Definitions

- *Action Level* - the concentration of lead or copper in the water specified in 40 CFR 141.80(c) which determines, in some cases, the treatment requirements that a water system is required to complete (40 CFR 141.2).

- *Best Available Technology (BAT)* - the best technology treatment techniques, or other means which the administrator finds, examined for efficacy under field conditions and not solely under

lab conditions that are available (taking cost into consideration). For the purposes of setting MCLs for synthetic organic chemicals, any BAT must be at least as effective as granular activated carbon (40 CFR 141.2).

- *Coagulation* - a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs (40 CFR 141.2).

- *Community Water System* - a public water system that serves at least 15 service connections used by year round residents or regularly serves at least 25 year-round residents (40 CFR 141.2)

- *Comprehensive Performance Evaluation (CPE)* - a thorough review and analysis of a treatment plant's performance-based capabilities and associated administrative, operation, and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements. For purposes of compliance with subpart P of this part, the comprehensive performance evaluation must consist of at least the following components: Assessment of plant performance; evaluation of major unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance; and preparation of a CPE report (40 CFR 141.2) **[Added January 1999].**

- *Contaminant* - any physical, chemical, biological, or radiological substance or matter in water (40 CFR 141.2).

- *Conventional Filtration Treatment* - a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal (40 CFR 141.2).

- *Diatomaceous Earth Filtration* - a process resulting in substantial particulate removal in which (40 CFR 141.2):
    1. a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum)
    2. while the water is filtered by passing through the cake on the septum, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.

- *Direct Filtration* - a series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal (40 CFR 141.2).

- *Disinfectant* - any oxidant, including but not limited to chlorine, chlorine dioxide, chloramines, and ozone added to water in any part of the treatment or distribution process, that is intended to kill or inactivate pathogenic micro-organisms (40 CFR 141.2).

- *Disinfection* - a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents (40 CFR 141.2).

- *Disinfection Profile* - a summary of daily *Giardia lamblia* inactivation through the treatment plant. The procedure for developing a disinfection profile is contained in 40 CFR 141.172 (40 CFR 141.2) **[Added January 1999].**

- *Domestic or Other Nondistribution System Plumbing Problem* - a coliform contamination problem in a public water system with more than one service connection that is limited to the specific service connection from which the coliform-positive sample was taken (40 CFR 141.2).

- *Enhanced Coagulation* - the addition of sufficient coagulant for improved removal of disinfection byproduct precursors by conventional filtration treatment (40 CFR 141.2) **[Added January 1999]**.

- *Enhanced Softening* - the improved removal of disinfection byproduct precursors by precipitative softening (40 CFR 141.2) **[Added January 1999]**.

- *Exempted Public Water Systems* - public water systems which meet all of the following are not required to meet the standards outlined in 40 CFR 141 (40 CFR 141.3):
    1. systems which consist only of distribution and storage facilities and do not have any collection and treatment facilities
    2. systems that obtain all of their water from, but are not owned by or operated by, a public water system to which 40 CFR 141 applies
    3. systems that do not sell water to any person
    4. systems that are not a carrier that conveys passengers in interstate commerce.

- *Filter Profile* - a graphical representation of individual filter performance, based on continuous turbidity measurements or total particle counts versus time for an entire filter run, from startup to backwash inclusively, that includes an assessment of filter performance while another filter is being backwashed (40 CFR 141.2) **[Added January 1999]**.

- *Filtration* - a process for removing particulate matter from water by passage through porous media (40 CFR 141.2).

- *Flocculation* - a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through gentle stirring by hydraulic or mechanical means (40 CFR 141.2).

- *GAC10* - granular activated carbon filter beds with an empty-bed contact time of 10 min based on average daily flow and a carbon reactivation frequency of every 180 days (40 CFR 141.2) **[Added January 1999]**.

- *Gross Alpha Particle Activity* - the total radioactivity due to alpha particle emissions as inferred from measurements on a dry sample (40 CFR 141.2).

- *Groundwater Under the Direct Influence of Surface Water* - any water beneath the surface of the ground with significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as Giardia lamblia or (for subpart H systems serving at least 10,000 people only) Cryptosporidium, or significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions. Direct influence must be determined for individual sources in accordance with criteria established by the state. The state determination of direct influence may be based on site-specific measurements of water quality and/or documentation of well construction characteristics and geology with field evaluation (40 CFR 141.2) **[Revised January 1999]**.

- *Haloacetic Acids (Five) (HAA5)* - the sum of the concentrations in milligrams per liter of the haloacetic acid compounds (monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid), rounded to two significant figures after addition (40 CFR 141.2) **[Added January 1999]**.

- *Halogen* - one of the chemical elements chlorine, bromine, or iodine (40 CFR 141.2).

- *Initial Compliance Period* - the first full 3 yr compliance period which begins at least 18 mo after promulgation, except for Dichloromethane, 1,2,4-Trichlorobenzene, 1,1,2-Trichloroethane, Benzo(a)pyrene, Dalapon, Di(2-ethythexyl) adipate, Di(2-ethythexyl) phthalate, Dinoseb, Diquat,

Endrin, Endothall, Glyphosate, Hexachlorobenzene, Hexachlorocyclopentadiene, Oxamyl (Vydate), Picloram, Simazine, 2,3,7,8,-TCDD (Dioxin), Antimony, Beryllium, Cyanide (as free Cyanide), Nickel, and Thallium, initial compliance period means the first full 3 yr compliance period after promulgation for systems with 150 or more service connections (January 1993 - December 1995, and first full 3 yr compliance period after the effective date of the regulation (January 1996 - December 1998) for systems having fewer than 150 service connections (40 CFR 141.2).

- *Large Water System* - in reference to lead and copper in systems, this refers to a water system that serves more than 50,000 persons (40 CFR 141.2).

- *Lead Service Line* - a service line made of lead which connects the water main to the building inlet and any lead pigtail, gooseneck, or other fitting which is connected to such a lead line (40 CFR 141.2).

- *Legionella* - means a genus of bacteria, some species of which have caused a type of pneumonia called Legionnaires Disease (40 CFR 141.2).

- *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.

- *Maximum Contaminant Level (MCL)* - the maximum permissible level of a contaminant in water that is delivered to any user of a public water system (40 CFR 141.2).

- *Maximum Contaminant Level Goal (MCLG)* - refers to the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. MCLGs are nonenforceable health goals (40 CFR 141.2).

- *Maximum Residual Disinfectant Level (MRDL)* - a level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects. For chlorine and chloramines, a PWS is in compliance with the MRDL when the running annual average of monthly averages of samples taken in the distribution system, computed quarterly, is less than or equal to the MRDL. For chlorine dioxide, a PWS is in compliance with the MRDL when daily samples are taken at the entrance to the distribution system and no two consecutive daily samples exceed the MRDL. MRDLs are enforceable in the same manner as maximum contaminant levels under Section 1412 of the Safe Drinking Water Act. There is convincing evidence that addition of a disinfectant is necessary for control of waterborne microbial contaminants. Notwithstanding the MRDLs listed in 40 CFR 141.65, operators may increase residual disinfectant levels of chlorine or chloramines (but not chlorine dioxide) in the distribution system to a level and for a time necessary to protect public health to address specific microbiological contamination problems caused by circumstances such as distribution line breaks, storm runoff events, source water contamination, or cross-connections (40 CFR 141.2) **[Added January 1999].**

- *Maximum Residual Disinfectant Level Goal (MRDLG)* - the maximum level of a disinfectant added for water treatment at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. MRDLGs are nonenforceable health goals and do not reflect the benefit of the addition of the chemical for control of waterborne microbial contaminants (40 CFR 141.2) **[Added January 1999].**

- *Maximum Total Trihalomethane (TTHM) Potential* - means the maximum concentration of TTHM produced in a given water containing a disinfectant residual after 7 days at a temperature of 25 °C or above (40 CFR 141.2).

- *Medium Size Water System* - in reference to lead and copper in systems, this refers to a water system that serves greater than 3300 and less than or equal to 50,000 persons (40 CFR 141.2).

- *Near the First Service Connection* - means at one of the 20 percent of all service connections in the entire system that are nearest the water supply treatment facility, as measured by water transport time within the distribution system (40 CFR 141.2).

- *Noncommunity Water System* - a public water system that is not a community water system (40 CFR 141.2).

- *Nontransient, Noncommunity Water System (NTNCWS)* - a public water system that is not a community water system and that regularly serves at least 25 of the same persons over 6 mo/yr (40 CFR 141.2).

- *Person* - an individual, corporation, company, association, partnership, municipality, or state, Federal, or tribal agency (40 CFR 141.2).

- *PicoCurie (pCi)* - quantity of radioactive material producing 2.22 nuclear transformations/min (40 CFR 141.2).

- *Point of Disinfectant Application* - the point where the disinfectant is applied and water downstream of that point is not subject to recontamination by surface water runoff (40 CFR 141.2).

- *Point-of-Entry Treatment Device* - a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building (40 CFR 141.2).

- *Point-of-Use Treatment Device* - a treatment device applied to a single tap used for the purpose of reducing contaminants in drinking water at that one tap (40 CFR 141.2).

- *Public Water System* - a system for providing piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. This term includes (40 CFR 141.2):
    1. any collection, treatment, storage, and distribution facilities under control of the operator of such system
    2. any collection or pretreatment storage facilities not under such control that are used primarily in connection with such system.

  A public water system is either a community water system or a noncommunity water system.

- *Rem* - the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A millirem (mrem) is 1/1000 of a rem (40 CFR 141.2).

- *Residual Disinfectant Concentration* - ("C" in CT calculations) is the concentration of disinfectant measured in milligrams per liter in a representative sample of water (40 CFR 141.2).

- *Sanitary Survey* - an onsite review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source facilities, equipment, operation and maintenance for producing and distributing safe drinking water (40 CFR 141.2).

- *Sedimentation* - a process for removal of solids before filtration by gravity or separation (40 CFR 141.2).

- *Slow Sand Filtration* - a process involving passage of raw water through a bed of sand at low velocity (generally less than 0.4 m/h [1.31 ft/h]) resulting in substantial particulate removal by physical and biological mechanisms (40 CFR 141.2).

- *Standard Sample* - the aliquot of finished drinking water that is examined for the presence of coliform bacteria (40 CFR 141.2).

- *State* - the agency of the state or tribal government that has jurisdiction over public water systems. During any period when a state or tribal government does not have primary enforcement responsibility pursuant to Section 1413 of the SDWA (42 USC 300g-2), the term state means the Regional Administrator of the USEPA (40 CFR 141.2).

- *Subpart H Systems* - public water systems using surface water or groundwater under the direct influence of surface water as a source that are subject to the requirements of subpart H of this part (40 CFR 141.2) **[Added January 1999]**.

- *Supplier of Water* - any person who owns or operates a public water system (40 CFR 141.2).

- *Surface Water* - all water that is open to the atmosphere and subject to surface runoff (40 CFR 141.2).

- *SUVA* - Specific Ultraviolet Absorption at 254 nanometers (nm), an indicator of the humic content of water. It is a calculated parameter obtained by dividing a sample's ultraviolet absorption at a wavelength of 254 nm (UV_{254}) (in m^{-1}) by its concentration of dissolved organic carbon (DOC) (in mg/L) (40 CFR 141.2)**[Added January 1999]**.

- *System with a Single Service Connection* - a system which supplies drinking water to consumers via a single service line (40 CFR 141.2).

- *Total Trihalomethane (TTHM)* - the sum of the concentration in milligrams per liter of the trihalomethane compounds rounded to two significant figures (40 CFR 141.2).

- *Total Organic Carbon (TOC)* - total organic carbon in mg/L measured using heat, oxygen, ultraviolet irradiation, chemical oxidants, or combinations of these oxidants that convert organic carbon to carbon dioxide, rounded to two significant figures (40 CFR 141.2) **[Added January 1999]**.

- *Transient Noncommunity Water System (TWS)* - a noncommunity water system that does not regularly serve at least 25 of the same persons over 6 mo per year (40 CFR 141.2).

- *Trihalomethane (THM)* - one of the family of organic compounds, named as derivatives of methane, wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure (40 CFR 141.2).

- *Uncovered Finished Water Storage Facility* - a tank, reservoir, or other facility used to store water that will undergo no further treatment except residual disinfection and is open to the atmosphere (40 CFR 141.2) **[Added January 1999]**.

- *Virus* - means a virus of fecal origin which is infectious to humans by waterborne transmission (40 CFR 141.2).

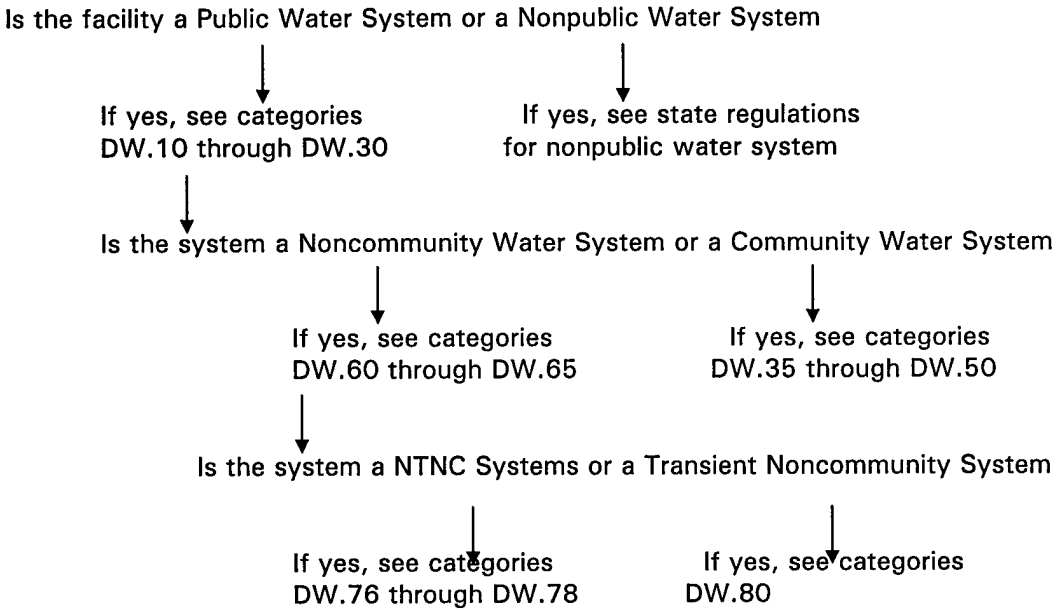
- *Waterborne Disease Outbreak* - the significant occurrence of acute infectious illness, epidemiologically associated with the ingestion of water from a public water system which is deficient in treatment, as determined by the appropriate local or state agency (40 CFR 141.2).

DRINKING WATER MANAGEMENT

GUIDANCE FOR CHECKLIST USERS

	REFER TO CHECKLIST ITEMS:
All Facilities	DW.1.1 through DW.1.9
Public Water Systems	
General	DW.10.1 through DW.10.3
Monitoring/Sampling	DW.15.1 through DW.15.3
Disinfection and Filtration	DW.20.1 through DW.20.11
Lead and Copper	DW.25.1
Notification and Reporting Requirements	DW.30.1 through DW.30.5
Community Water Systems	
Standards	DW.35.1 through DW.35.3
Monitoring/Sampling	DW.40.1 through DW.40.17
Notifications	DW.45.1 and DW.45.2
Lead and Copper	DW.50.1 through DW.50.10
Noncommunity Water Systems	
Standards	DW.60.1
Monitoring/Sampling	DW.65.1 through DW.65.5
Nontransient/Noncommunity (NTNC) Water Systems	
Standards	DW.76.1 and DW.76.2
Monitoring/Sampling	DW.77.1 through DW.77.9
Lead and Copper	DW.78.1 through DW.78.10
Transient/Noncommunity Water Systems	DW.80.1 and DW.80.2
Sole Source Aquifer	DW.95.1

Please see the next page for additional guidance on drinking water systems.



NOTE: NTNC = Nontransient, noncommunity.

Records To Review

- Bacterial and chemical analyses of drinking water, including sampling dates and locations, dates of analyses, analytical methods used, and results of analyses
- Monthly operating reports (flow, chlorine residual, etc.)
- State and public notification of noncompliance with primary drinking water regulations
- Action taken by the facility to correct violations of primary drinking water regulations
- Sanitary surveys of the water system conducted by the facility itself, a private consultant, or any local, state, or the FWS
- Variance or exemption granted to the facility for its water supply system
- Permit authorizing the operation of an underground injection well
- Records of planning and construction of injection wells
- Results of injection well monitoring

Physical Features To Inspect

- Records of planning and construction of injection wells
- Laboratory analysis facilities
- Underground injection well
- Well sites

COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
DW.1 **ALL FACILITIES**	
DW.1.1. The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/ identifying information as the citation).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, interagency agreements, or equivalent state enforcement actions.
DW.1.2. FWS facilities are required to comply with state and local water quality regulations (EO 12088, Section 1-1 and 42 USC 300h-7(h)).	Verify that the facility is complying with state and local water quality requirements. Verify that the facility is operating according to permits issued by the state or local agencies. (NOTE: Issues typically regulated by state and local agencies include: – more stringent contaminant level requirements certification and training requirements – water system surveys – reporting requirements – monitoring frequency – use of groundwater – use and maintenance of wells – wellhead protection programs – cross connection control and backflow prevention – O&M practices such as: maintenance of a disinfectant residual throughout the distribution system; proper maintenance of the distribution system; proper disinfection of replaced or repaired mains; main flushing – UIC programs.)
DW.1.3. Facilities are	Determine if any new regulations concerning water quality have been

COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
required to meet regulatory requirements issued since the finalization of the handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).	issued since the finalization of the handbook. Verify that the facility is in compliance with newly issued regulations.
DW.1.4. FWS facilities should report all NOVs to the Region and the Environmental and Facility Compliance (EFC) (MP) **[Revised June 1998].**	Determine if the facility has received an NOV relating to drinking water. Verify that the NOV was reported to the Region and the EFC.
DW.1.5. Analysis of all samples, except turbidity, free chlorine residual, temperature, and pH, to determine compliance with MCLs must be performed in a state-certified laboratory or by a state-approved individual (40 CFR 141,23(k)(3), 141.24(f)(17), 141.24 (h)(19), and 141.28).	Verify that the laboratory is certified by reviewing documentation of state certification for laboratory analysis.
DW.1.6. Service controlled water supply systems with water available for human consumption must meet specific monitoring requirements (RP, 561 FW 4.7(c)(2)(a) through 4.7(c)(2)(d) and 4.7(c)(3)) **[Citation Revised June 1998].**	Verify that Service-controlled water supply systems with water available for human consumption (e.g., visitor centers, hatchery buildings, shops, offices, residences, headquarters buildings, laboratories, hand pumps located in camp grounds and picnic areas etc.) monitor and analyze the water as follows: – weekly: total coliforms when using surface water that is unfiltered and not disinfected – quarterly: total coliforms when using groundwater or filtered and disinfected surface water – annually: total nitrate, total nitrite, lead, and copper – every 6 yr: all other regulated contaminants. (NOTE: This requirement applies regardless of the size of the system

COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	or the frequency or duration of use.) Verify that the initial round of monitoring and analysis for those facilities not already meeting minimum requirements is done by 13 January 2000.
DW.1.7. Every Service controlled water supply system must monitor for coliforms, lead, cop per, nitrite, and nitrates (RP, 561 FW 4.7(c)(2)(e) and 4.7(c)(3)) **[Citation Revised June 1998].**	Verify that every Service-controlled water supply systems monitors and analyzes the water as follows: – weekly: total coliforms when using surface water that is unfiltered and not disinfected – quarterly: total coliforms when using groundwater or filtered and disinfected surface water – annually: total nitrate, total nitrite, lead, and copper. (NOTE: This requirement applies regardless of the size of the system or the frequency or duration of use.) (NOTE: Water supply systems supplied from a groundwater source can satisfy monitoring requirements if monitoring results from another water supply system can be obtained, provided that the other system is located within 15 mi downgradient, the water comes from the same aquifer, the analysis was performed by a certified laboratory, and the copies of the analysis are maintained at the Service facility.) Verify that the initial round of monitoring and analysis for those facilities not already meeting minimum requirements is done by 13 January 2000.
DW.1.8. When MCLs are exceeded, the Regional Compliance Coordinator must be notified (RP, 561 FW 4.7(c)(4)) **[Citation Revised June 1998].**	Verify that, when MCLs are exceeded, the RCC is notified.
DW.1.9. When standards for water quality cannot be met, Service waters must be made unavailable for human consumption (RP, 561 FW 4.7(c)(5)) **[Citation Revised June 1998].**	Verify that, when standards for water quality cannot be met, Service waters are made unavailable for human consumption.

COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
PUBLIC WATER SYSTEMS **DW.10** **General**	(NOTE: A public water system is a system for providing piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. This term includes: – any collection, treatment, storage, and distribution facilities under control of the operator of such system – any collection or pretreatment storage facilities not under such control that are used primarily in connection with such system. A public water system is either a community water system or a noncommunity water system and must comply with the standards outlined in the applicable sections of this checklist.)
DW.10.1. The facility must keep records of actions taken to correct violations of primary drinking water regulations for at least 3 yr (40 CFR 141.33(b)).	Verify that as-built drawings are updated to reflect changes in water supply. Verify that water system records are maintained for at least 3 yr. Determine if there are recurring work programs, spare parts and supplies list, and equipment calibration and maintenance history records.
DW.10.2. Facilities are required to survey public water systems according to a specified schedule and maintain records of those reviews (40 CFR 141.21(d) and 141.33 (c)).	Verify that noncommunity water systems, which do not collect five or more routine samples per month, have undergone an initial sanitary survey by 29 June 1999 and are then surveyed every 5 yr thereafter. Verify that community water systems that collect less than five routine biological samples per month are surveyed every 5 yr since 29 June 1994. (NOTE: Noncommunity water systems, using only protected and disinfected groundwater, are only required to conduct a survey every 10 yr after the initial survey.) Verify that records of sanitary system surveys are kept for 10 yr. Verify that the results of the sanitary surveys have been submitted to the state and determine whether the state has requested an alternate monitoring frequency.
DW.10.3. Public water	Determine if the facility public water system uses a point-of-use

COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
systems that use point-of-use devices to comply with MCL are required to meet specific standards (40 CFR 141.100 and 141.101) **[Revised June 1998].**	device to comply with MCLs. Verify that the facility has developed and obtained state approval for a monitoring plan prior to the point-of-use devices being installed. Verify that the parameters of the plan are being followed. (NOTE: The design and application of the point-of-entry devices must consider the tendency for increase in heterotrophic bacteria concentrations in water treated with activated carbon.) Verify that all consumers are protected and every building connected to the system has a point-of-entry device installed, maintained, and adequately monitored. (NOTE: Public water systems may not use bottled water to achieve compliance with an MCL. But, bottled water may be used on a temporary basis to avoid unreasonable risk to health.)

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PUBLIC WATER SYSTEMS **DW.15 Monitoring/Sampling**	
DW.15.1. Total coliform samples are required to be collected at regular time intervals throughout the month except at systems which use only groundwater and serve 4900 persons or fewer (40 CFR 141.21 (a)(4)).	Verify that total coliform samples are collected at regular intervals. (NOTE: Systems that use groundwater (except groundwater under the influence of surface water) and serve 4900 persons or fewer may collect all required samples on a single day if they are being taken from different sites.)
DW.15.2. Public water systems that use surface water or ground water, under the direct influence of surface water, that do not practice filtration, are required to collect at least one total coliform sample near the first service connection each day the turbidity level of the source water exceeds 1 NTU (40 CFR 141.21 (a)(5) and 141.74(b)(1)).	Verify that, when the turbidity exceeded 1 NTU, total coliform samples were taken within 24 h of the first exceedence by reviewing the records on turbidity levels.
DW.15.3. When a routine sample is total coliform-positive, the public water system must collect a set of repeat samples within 24 h of being notified of the positive result (40 CFR 141.21(b)(1) through 141.21(b)(4) and 141.21(e)(1)).	Verify that, if the system collects more than one routine sample per month is collected, at least three repeat samples are collected for each total coliform-positive sample found. Verify that, if one or less routine sample per month is collected, no less than four repeat samples are collected for each total coliform-positive sample found. Verify that at least one of the repeat samples is collected from the sampling tap where the original total coliform positive sample was taken. Verify that at least one repeat sample is taken at a tap within five

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	service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. Verify that the sampling process is repeated until either total coliforms are not detected in one complete set of repeat samples or the system determines that the MCL for total coliforms is exceeded and the state is notified. Verify that all repeat samples are collected on the same day. Verify that, if one or more of the repeat samples is total coliform-positive, an additional set of repeat samples is collected within 24 h of notification of the positive result. Verify that, if a repeat sample is total coliform-positive, it is also analyzed for fecal coliforms. (NOTE: The system may test for *Escherichia coli (E. coli)* instead of fecal coliforms.)

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PUBLIC WATER SYSTEMS
 	
DW.20
Disinfection and Filtration
 	
DW.20.1. Public water systems that use surface water sources or groundwater sources under direct influence of a surface water source must provide filtration as a treatment technique for microbiological contaminants unless certain criteria are met (40 CFR 141.71(a) and 141.71 (b)) **[Revised January 1999].**
	(NOTE: Public water systems that use a groundwater source under the direct influence of a surface water source are not required to meet these conditions to avoid filtration until 18 mo after the state has determined that the system is under the direct influence of surface water.)
	
	Verify that filtration of drinking water is performed unless all of the following conditions for surface water are met:
	
	– the fecal coliform concentration is less than or equal to 20/100 mL or total coliform concentration is equal to or less than 100/100 mL in representative samples of the source water immediately prior to the first or only point of disinfectant application in at least 90 percent of the measurements made in the last 6 mo that the system served water to the public on an ongoing basis
	– the turbidity level does not exceed 5 NTU in representative samples of the source water immediately prior to the first or only point of disinfectant application, unless state determines otherwise and there has not been more than two events in the past 12 mo the system served water to the public or more than five events in the past 120 mo the system served water to the public.
	
	Verify that filtration of drinking water is done unless all the following site specific conditions are met:
	
	– meets the requirements of 40 CFR 141.72(a)(1) (see checklist item DW.20.3) for disinfection treatment of *Giardia lamblia* for at least 11 of the 12 previous mo
	– meets 40 CFR 141.72(a)(2) through 141.72(a)(4) (see checklist item DW.20.3) at all times
	– maintains a watershed control program for *Giardia lamblia* in the source water, including:
	  – identification of watershed characteristics
	  – monitoring occurrence of activities that have adverse effects
	  – demonstrates through ownership and/or written agreements that the control of adverse effects of human activities are regulated

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	– submits annual reports to the state – subject to annual onsite inspection by the state or a party approved by the state, to assess watershed control program - has not been identified as a source of waterborne disease or threat or has been modified sufficiently to prevent recurrence – complies with MCL for total coliforms as defined in 40 CFR 141.63 for at least 11 of the previous 12 mo (see Appendix 2-1) – complies with requirements for trihalomethanes as listed on 40 CFR 141.12 and 141.30 until 17 Dec 2001 (see Appendix 2-1) and thereafter complies with the requirements for total trihalomethanes, haloacetic acids (five), bromate, chlorite, chlorine, chloramine, and chlorine dioxide (see Appendix 2-9).
DW.20.2. Systems that do not meet the criteria necessary for exclusion from filtration for public water systems that use a surface water source or a groundwater source under the direct influence of surface water must provide filtration that meets specific standards by 29 June 1993, or within 18 mo after being required to provide filtration, which ever is later (40 CFR 141.73, 141.74(c)(1), through 141.74(c)(4)) **[Revised January 1999].**	Verify that, if conventional or direct filtration is used, the following are met: – a turbidity level of 0.5 NTU or less in 95 percent of measurements taken each month – the turbidity level of representative samples of filtered water at no time exceeds 5 NTU – systems serving at least 10,000 people meet the turbidity requirements in 40 CFR 141.173(a) starting 17 December 2001. Verify that, if slow sand filtration is used, the following are met: – the turbidity level of representative samples of a systems filtered water is 1 NTU or less in 95 percent of the monthly measurements. – the turbidity level of representative samples of a systems filtered water at no time exceeds 5 NTU. Verify that, if diatomaceous earth filtration is used, the following is met: – the turbidity level of representative samples of a systems filtered water is less than or equal to 1 NTU in at least 95 percent of the measurements taken each month – the turbidity level of representative samples of a systems filtered water at no time exceeds 5 NTU. Verify that, if other filtration technologies are used, they have been approved by the state.

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	Verify that, starting 29 June 1993, or when filtration is installed, turbidity measurements are performed on representative samples of the systems filtered water every 4 h that the system serves water to the public. Verify that, as of 29 June 1993, or whenever filtration is installed, the residual disinfectant concentration of water entering the distribution system is monitored continuously and the lowest value recorded each day. Verify that, if there is a failure in the continuous monitoring equipment, grab sampling is done every 4 h. (NOTE: Grab sampling can be done for no more than 5 working days following the failure of the continuous monitoring system.) (NOTE: Systems serving 3300 or fewer person can use grab sampling instead of continuous monitoring if the following daily frequencies are met: System size by population — Samples/day < 500 — 1 501 - 1000 — 2 1001 - 2500 — 3 2501 - 3300 — 4.) Verify that, any time the residual disinfectant concentration falls below 0.2 mg/L in a system using grab sampling, the system takes a grab sample every 4 h until the residual disinfectant concentration is equal to or greater than 0.2 mg/L. Verify that the residual disinfectant concentration is measured at least at the same points in the distribution system and at the same time as total coliforms are sampled.

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DW.20.3. Facilities with public water systems that use a surface water source or a groundwater source under direct influence of a surface water source, that is not required to provide filtration, are required to provide disinfection treatment by 30 December 1991 (40 CFR 141.72(a)).	Verify that the following requirements for disinfection are met:
	– it ensures 99.9 percent (3-log) inactivation of *Giardia lamblia* cysts every day except for once per month by meeting the required CT applicable to the systems particular water quality parameters as outlined in 40 CFR 141.74
	– it ensures 99.99 percent (4-log) inactivation of virus every day except for once per month by meeting the required CT applicable to the systems particular water quality parameters as outlined in 40 CFR 141.74
	– the CT values are calculated daily as specified in 40 CFR 141.74(b)(3)
	– throughout the disinfection system there is either:
	  – automatic startup and alarm for insuring continuous disinfection application while water is delivered through the distribution system
	  – automatic shutoff when there is less than 0.2 mg/L residual disinfectant
	– the residual disinfectant concentration in water entering distribution system is not less than 0.2 mg/L for more than 4 h
	– the residual disinfectant concentration, measured as total chlorine, combined chlorine, or chlorine dioxide is not undetectable in more than 5 percent of samples each month for more than 2 consecutive months.
	
	(NOTE: Water in a distribution system with a heterotrophic bacteria concentration less than or equal to 500 mL, measured as heterotrophic plate count (HPC) is deemed to have a detectable disinfectant residual.)

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DW.20.4. Facilities with public water systems that use a surface water source or a groundwater source, under direct influence of a surface water source, that provide filtration or that are required by the state to install filtration, must meet specific disinfection requirements by 29 June 1993 or within 18 mo of being required to install filtration (40 CFR 141.72(b) and 141.73).	Determine if the facility provides filtration for drinking water. Verify that the following requirements for disinfection are provided: – it ensures 99.9 percent (3-log) inactivation of Giardia lamblia cysts – it ensures 99.99 percent (4-log) inactivation of viruses – the residual disinfectant concentration in water entering distribution system is not less than 0.2 mg/L for more than 4 h – the residual disinfectant concentration throughout the distribution system is not undetectable in more than 5 percent of samples each month for any 2 consecutive months the system serves water to the public – analytical methods as specified in 40 CFR 141.74 are used to demonstrate compliance with the requirements for filtration and disinfection. (NOTE: Systems that filter are given an inactivation credit dependent on the type of filtration used.)
DW.20.5. Facilities with public water systems that use a surface water source and do not provide filtration are required to report specific information monthly to the state beginning 31 December 1990 (unless the state has determined that filtration is not required) until filtration is in place (40 CFR 141.75(a)).	Verify that the following listed information is reported to the state at the indicated times: – source water quality information within 10 days after the end of each month the system serves water to the public – disinfection information within 10 days after the end of each month the system serves water to the public – a report summarizing compliance with all watershed control programs no later than 10 days after the end of each Federal FY – a report on the onsite inspection conducted during that year, unless it was conducted by the state, no later than 10 days after the end of the Federal FY – the occurrence of a waterborne disease outbreak potentially attributable to that water system as soon as possible, but no later than by the end of the next business day – when turbidity exceeds 5 NTU, as soon as possible, but no later than the end of the next business day – any time the residual falls below 0.2 mg/L in the water entering the distribution system as soon as possible, but no later than by the end of the next business day. (NOTE: See the complete text of 40 CFR 141.75(a) for more details on how this information is to be reported.)

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DW.20.6. Facilities with public water systems that use a ground water source under the direct influence of surface water and do not provide filtration treatment must report specific information to the state monthly starting 31 December 1990, or 6 mo after the state determines that the groundwater source is under the direct influence of surface water, whichever is later (40 CFR 141.75(a)).	Verify that the following listed information is reported to the state at the indicated times: – source water quality information within 10 days after the end of each month the system serves water to the public – disinfection information within 10 days after the end of each month the system serves water to the public – a report summarizing compliance with all watershed control programs no later than 10 days after the end of each Federal FY – a report on the onsite inspection conducted during that year, unless it was conducted by the state, no later than 10 days after the end of the Federal FY – the occurrence of a waterborne disease outbreak potentially attributable to that water system as soon as possible, but no later than by the end of the next business day – when turbidity exceeds 5 NTU, as soon as possible but no later than the end of the next business day – any time the residual falls below 0.2 mg/L in the water entering the distribution system as soon as possible, but no later than by the end of the next business day. (NOTE: See the complete text of 141.75(a) for more details on how this information is to be reported.)
DW.20.7. Facilities with public water systems that use a surface water source or a groundwater source under the direct influence of surface water that provide filtration must report specific information monthly to the state starting 29 June 1993 or when filtration is installed, whichever is later (40 CFR 141.75(b)).	Verify that by 29 June 1993, or whenever filtration is installed, the following information is provided to the state in the indicted time frame: – turbidity measurements within 10 days after the end of each month the system serves water to the public – disinfection information within 10 days after the end of each month the system serves water to the public – notice of an occurrence of a waterborne disease outbreak, as soon as possible but no later than by the end of the next business day – when the turbidity exceeds 5 NTU, as soon as possible, but no later than the end of the next business day – any time the residual falls below 0.2 mg/L in the water entering the distribution system, as soon as possible, but no later than by the end of the next business day. (NOTE: See the complete text of 40 CFR 141.75(b) for more details

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	on how this information is to be reported.)
DW.20.8. USEPA has set certain standards for analytic procedures that must be used and followed to demonstrate compliance with disinfection and filtration requirements (40 CFR 141.74).	Verify that analytic methods as specified in 40 CFR 141.74 are used to demonstrate compliance with the requirements for filtration and disinfection.
DW.20.9. As of 17 December 2001, Subpart H systems serving at least 10,000 people must provide filtration unless certain criteria are met (40 CFR 141.170(a), 141.171, and 141.173) **[Added January 1999].**	(NOTE: These requirements for filtration and disinfection are in addition to criteria under which filtration and disinfection are required under 40 CFR 141.70 through 141.75.) Verify that each subpart H system serving at least 10,000 people provides treatment of its source water by installing and properly operating water treatment processes that reliably achieve: – at least 99 percent (2-log) removal of Cryptosporidium between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer for filtered systems, or Cryptosporidium control under the watershed control plan for unfiltered systems – compliance with the profiling and benchmark requirements under 40 CFR 141.172. Verify that filtration is provided that meets with one of the following by 17 December 2001: – conventional filtration or direct filtration that results in: – the turbidity level of representative samples of a system's filtered water is </= 0.3 NTU in at least 95 percent of the measurement taken each month – the turbidity level of representative samples of the system's filtered water at no time exceeds 1 NTU – alternate technologies approved by the State. (NOTE: When using conventional filtration or direct filtration, a system that uses lime softening may acidify representative samples prior to analysis using a protocol approved by a state.) (NOTE: In addition to the requirements of 40 CFR 141.71, a public

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	water system that does not provide filtration must maintain a watershed control program under 40 CFR 141.71(b)(2), which does the following to minimize the potential for contamination by Cryptosporidium oocysts in the source water: – identify watershed characteristics and activities which may have an adverse effect on source water quality – monitor the occurrence of activities which may have an adverse effect on source water quality.) (NOTE: The State must determine whether the watershed control program is adequate to limit potential contamination by Cryptosporidium oocysts. The adequacy of the program must be based on the comprehensiveness of the watershed review; the effectiveness of the system's program to monitor and control detrimental activities occurring in the watershed; and the extent to which the water system has maximized land ownership and/or controlled land use within the watershed.)
DW.20.10. Public water system may not begin construction of uncovered finished water storage facilities beginning 16 February 1999 (40 CFR 141.170(a) and 141.170(c)) **[Added January 1999].**	Verify that each subpart H system serving at least 10,000 people do not begin construction of uncovered finished water storage facilities beginning 16 February 1999.
DW.20.11. As of 17 December 2001, Subpart H systems serving at least 10,000 people providing disinfection must perform disinfection profiling and benchmarking (40 CFR 141.170(a) and 141.172) **[Added January 1999].**	(NOTE: These requirements for filtration and disinfection are in addition to criteria under which filtration and disinfection are required under 40 CFR 141.70 through 141.75.) Verify that the public water systems determines its TTHM annual average using the procedure in 40 CFR 141.172(a)(1) and its HAA5 annual average using the procedure in 40 CFR 141.172 (a)(2). (NOTE: The annual average is the arithmetic average of the quarterly averages of four consecutive quarters of monitoring.) (NOTE: The system may request that the state approve a more representative annual data set for the purpose of determining applicability of the requirements of this section. The state may require that a system use a more representative annual data set for the purpose of determining applicability of the requirements of this section.) Verify that the system submits data to the state in accordance with

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	the determination procedures used. Verify that any system having either a TTHM annual average >/= 0.064 mg/L or an HAA5 annual average >/= 0.048 mg/L during the required period develops a disinfection profile of its disinfection practice for a period of up to 3 yr. (NOTE: The details of how a disinfection profile is developed can be found in 40 CFR 172(b).) Verify that any system required to develop a disinfection profile that decides to make a significant change to its disinfection practice consults with the state prior to making such a change. (NOTE: Significant changes to disinfection practice are: – changes to the point of disinfection – changes to the disinfectant(s) used in the treatment plant – changes to the disinfection process – any other modification identified by the state. Verify that any system modifying its disinfection practice calculates its disinfection benchmark using the procedure specified 40 CFR 141.172(c)(2)(i) through (ii). Verify that systems using either chloramines or ozone for primary disinfection calculate the disinfection benchmark for viruses using a method approved by the state.

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PUBLIC WATER SYSTEMS **DW.25** **Lead and Copper** **DW.25.1.** The use of pipe, solder, or flux that contains lead is not allowed in specific situations (40 CFR 141.43(a)(1) and 141.43(d)).	Verify that lead pipe, solder, or flux is not used in the installation or repair of either of the following: – any public water system – any plumbing in a residential facility providing water for human consumption which is connected to a public water system. (NOTE: This does not apply to leaded joints necessary for the repair of cast iron pipes.) (NOTE: Lead-free is defined as not more than 0.2 percent content for solders and flux and not more than 8.0 percent lead in reference to pipes and pipe fittings.)

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PUBLIC WATER SYSTEMS **DW.30** **Notification and Reporting Requirements**	
DW.30.1. Public water systems are required to maintain on the premises, or at a convenient location, specific records (40 CFR 141.33(a), 141.33(b), and 141.33(d)).	Verify that records of bacteriological analyses are kept for a minimum of 5 yr. Verify that records of chemical analyses are kept for a minimum of 10 yr. Verify that records concerning a variance or exemption granted to the system are kept for a period ending not less than 5 yr following the expiration of the variance or exemption.
DW.30.2. When primary drinking water standards (i.e., MCLs and MRDLs) are exceeded, public notifications must be made (40 CFR 141.32) **[Revised January 1999].**	Verify that, if there was an exceedance, the following public notification procedures were followed: – notices were placed in a daily newspaper of general circulation in the area served by the system as soon as possible, but no later than 14 days after the violation or failure – notices were placed in a weekly newspaper of general circulation if there is no daily newspaper – notices were issued by mail delivery, by direct mail or with the water bill, or by hand delivery within 45 days after the violation or failure. (NOTE: The state may waive mail or hand delivery if it is determined that the violation or failure is corrected within the 45-day period.) Verify that, if it was an acute violation, the public radio and television stations were notified no later than 72 h after the violation. Verify that, if public notification was made, it was made according to USEPA guidelines. Verify that, following the initial notice, additional notice is given at least once every 3 mo by mail delivery, or by hand delivery, for as long as the violation exists. (NOTE: Instead of the requirements outlined here, community water

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	systems in an area that is not served by a daily or weekly newspaper of general circulation must give notice by hand delivery or by continuous posting in conspicuous places within the area served by the system. Notice must be given within 72 h for acute violations and 14 days for other violations.)
DW.30.3. Facilities that operate public water systems must send reports to the state on any failure to comply with applicable biological, turbidity, radioactivity, and chemical standards, and on any failure to comply with monitoring requirements that apply (40 CFR 141.31).	Verify that, in general, reports are sent within the first 10 days following the month in which the result is received or the first 10 days following the end of the required monitoring period whenever standards are not met. Verify that the facility reported failure to comply with any national primary drinking water regulations to the state within 48 h.
DW.30.4. Public water systems which are required to sample quarterly for disinfection byproducts, disinfectants, and disinfection byproducts precursors (DBPs) must meet specific reporting requirements (40 CFR 141.134) **[Added January 1999].**	Verify that systems required to sample quarterly or more frequently for disinfection byproducts, disinfectants, and DBPs report to the state within 10 days after the end of each quarter in which samples were collected. Verify that systems required to sample less frequently than quarterly report to the state within 10 days after the end of each monitoring period in which samples were collected. Verify that the information in Appendix 2-11 is reported, as applicable.
DW.30.5. As of 17 December 2001, Subpart H systems serving at least 10,000 people that provide filtration are required to report specific information to the State (40 CFR 141.175) **[Added January 1999].**	Verify that systems that provide conventional filtration treatment or direct filtration report the following monthly: – turbidity measurements are reported within 10 days after the end of each month the system serves water to the public and includes: – the total number of filtered water turbidity measurements taken during the month – the number and percentage of filtered water turbidity measurements taken during the month that are less than or equal to the turbidity limits – the date and value of any turbidity measurements taken during the month which exceed 1 NTU, or which exceed the maximum level set by the state

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	– that they have conducted individual filter turbidity monitoring, within 10 days after the end of each month that the system serves water to the public – individual filter turbidity measurement results, within 10 days after the end of each month that the system serves water to the public only if measurements demonstrate one or more of the following conditions: – for any individual filter that has a measured turbidity level of > 1.0 NTU in two consecutive measurements taken 15 min apart, the system reports the filter number, the turbidity measurement, and the date on which the exceedance occurred. In addition, the system must either produce a filter profile for the filter within 7 days of the exceedance (if the system is not able to identify an obvious reason for the abnormal filter performance) and report that the profile has been produced or report the obvious reason for the exceedance – for any individual filter that has a measured turbidity level of > 0.5 NTU in two consecutive measurements taken 15 min apart at the end of the first 4 h of continuous filter operation after the filter has been backwashed or otherwise taken offline, the system reports the filter number, the turbidity, and the date(s) on which the exceedance occurred. In addition, the system must either produce a filter profile for the filter within 7 days of the exceedance (if the system is not able to identify an obvious reason for the abnormal filter performance) and report that the profile has been produced or report the obvious reason for the exceedance – for any individual filter that has a measured turbidity level of > 1.0 NTU in two consecutive measurements taken 15 min apart at any time in each of 3 consecutive months, the system reports the filter number, the turbidity measurement, and the date on which the exceedance occurred. In addition, the system conducts a self-assessment of the filter within 14 days of the exceedance and reports that the self-assessment was conducted – for any individual filter that has a measured turbidity level of > 2.0 NTU in two consecutive measurements taken 15 min

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	apart at any time in each of 2 consecutive months, the system reports the filter number, the turbidity measurement, and the date on which the exceedance occurred. In addition, the system arranges for the conduct of a comprehensive performance evaluation by the state or a third party approved by the state no later than 30 days following the exceedance and have the evaluation completed and submitted to the state no later than 90 days following the exceedance. Verify that systems maintain the results of individual filter monitoring for at least 3 yr.

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COMMUNITY WATER SYSTEMS **DW.35** **Standards**	(NOTE: A community water system is a public water system that serves at least 15 service connections used by year round residents or regularly serves at least 25 year-round residents. Community water systems must also comply with the standards for public water systems.)
DW.35.1. Community water systems, except as defined under exempted water systems in the definitions, are required to meet specific MCLs for inorganic and organic chemicals, fluorides, radium 226, radium-228, gross alpha particle radioactivity, beta particles, and photon radioactivity from manmade radionuclides (40 CFR 141.11(a), 141.11(b), 141.12, 141.15, 141.16(a), 141.62).	Verify that combined radium-226 and radium-228 do not exceed 5 pCi/L. Verify that gross alpha particle radioactivity does not exceed 15 pCi/L. Verify that the average annual concentration of beta particles and photon radioactivity from manmade radionuclides does not produce an average dose rate equal to the total body or any internal organ greater than 4 mrem/ yr. Verify that the MCL of 4.0 mg/L for fluoride is not exceeded. Verify that the MCLs outlined in Appendix 2-1 and 2-2 are met.
DW.35.2. Community water systems, except as defined under exempted water systems, are required to meet specific MCLs for organic contaminants, inorganic contaminants and microbiological contaminants (40 CFR 141.60 through 141.63).	Verify that the standards outlined in Appendix 2-1 and 2-2 are met. Verify that systems, which collect at least 40 bacteriological samples per month, have no more than 5 percent of the samples collected during a month that are total coliform positive. Verify that systems, which collect less than 40 bacteriological samples per month, have no more than one sample collected per month that is total coliform positive. Verify that there are no fecal coliform-positive repeat samples or *E. coli*-positive repeat samples, or any total coliform-positive repeat samples following a fecal coliform-positive or *E. coli*-positive routine sample.
DW.35.3. Community	Verify that community water systems meet the MCL for disinfection

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water systems are required to meet specific MCLs and MRDLs related to disinfection (40 CFR 141.64 and 141.65) **[Added January 1999].**	by-products and the MRDLs outlined in Appendix 2-9. (NOTE: This requirements applies to Subpart H systems serving 10,000 or more persons beginning 16 December 2001. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning 16 December 2003.) (NOTE: A system that is installing GAC or membrane technology to comply with MCL requirements may apply to the state for an extension of up to 24 mo past the compliance dates, but not beyond 16 December 2003. In granting the extension, States must set a schedule for compliance and may specify any interim measures that the system must take. Failure to meet the schedule or interim treatment requirements constitutes a violation of a National Primary Drinking Water Regulation.)

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COMMUNITY WATER SYSTEMS **DW.40** **Monitoring/Sampling** **DW.40.1.** Facilities with community water systems are required to meet specific monitoring requirements for inorganic contaminants (40 CFR 141.23 (a)).	Verify that groundwater systems: – take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (a sampling point) beginning in the compliance period starting 1 January 1993 – take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant. Verify that surface water systems: – take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point that is representative of each source after treatment (a sampling point) beginning in the compliance period starting 1 January 1993 – takes each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant. (NOTE: In relation to these requirements, surface water systems include systems with a combination of surface and ground sources.) Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions. (NOTE: The state may reduce the total number of samples which must be analyzed by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed if the detection limit of the method used for analysis is less than one fifth the MCL and compositing is done in a laboratory.) Verify that, if the concentration in a composite sample is greater than

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	or equal to one-fifth of the MCL of any inorganic chemical, a followup sample is analyzed within 14 days from each sampling point included in the composite and analyzed for the contaminants which exceeded one fifth of the MCL in the composite sample. (NOTE: Detection limits for each analytical methods and MCLs for each inorganic contaminant are listed in Appendix 2-3.) Verify that, for groundwater systems, inorganic monitoring is repeated at least once every compliance period (every 3 yr), and samples are taken quarterly for at least two quarters if a MCL is violated. Verify that, for surface water systems, inorganic sampling is repeated annually and samples are taken quarterly for at least four quarters if a MCL is violated. (NOTE: The state may issue a waiver reducing the required monitoring.)
DW.40.2. Facilities with community water systems are required to meet specific monitoring requirements for asbestos (40 CFR 141.23(b)).	Verify that asbestos is monitored during the first 3-yr compliance period of each 9-yr compliance cycle starting 1 January 1993. (NOTE: The facility may apply to the state for a waiver of monitoring if they believe that asbestos is not an issue.) Verify that, if the system is vulnerable to asbestos contamination only because of corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur. Verify that, if the system is vulnerable to asbestos contamination due to both its source water supply and corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where contamination is most likely to occur. Verify that, when the MCL is exceeded, monitoring is done quarterly.
DW.40.3. Facilities with community water	Verify that monitoring is done as follows:

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systems are required to meet specific monitoring requirements for antimony, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, and thallium (40 CFR 141.23(c)).	– groundwater systems: take one sample at each sampling point during each compliance period – surface water systems (or combined surface/ground): take one sample annually at each sampling point – when MCLs are exceeded, monitoring is done quarterly. (NOTES: States may grant a public water system a waiver for the monitoring of cyanide.)
DW.40.4. All community water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels according to specific parameters (40 CFR 141.23(d) and 141.23 (e)).	Verify that the following schedules are met for monitoring of nitrate: – community water systems served by groundwater monitor annually starting 1 January 1993 – community water systems served by surface water monitor quarterly starting 1 January 1993. Verify that, when the MCL for nitrate is exceeded, community water systems do repeat monitoring quarterly for at least 1 yr following any one sample in which the concentration exceeds more than 50 percent of the MCL. (NOTE: After the initial round of quarterly sampling is completed, each community system which is monitoring annually shall take the subsequent samples during the quarters which previously resulted in the highest analytical result.) Verify that public water systems take one sample at each sampling point in the compliance period beginning 1 January 1993 and ending 31 December 1995 for nitrite. (NOTE: After the initial sample, systems where an analytical result for nitrite is less than 50 percent of the MCL will monitor at the frequency specified by the state.) Verify that community systems repeat monitoring for nitrites quarterly for at least 1 yr after any one sample is greater than 50 percent of the MCL. Verify that systems, which are monitoring annually for nitrites, take each subsequent sample during the quarters which previously resulted in the highest analytical result. Verify that, when nitrate or nitrite samples indicate an exceedence of the MCL, a confirmation sample is taken within 24 h of receipt of the

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	results. (NOTE: If the system is unable to take a confirmation sample within 24 h, it must notify consumers of the exceedance.)
DW.40.5. Beginning with the initial compliance period, monitoring of the contaminants listed in Table 2 of Appendix 2-1 at community water systems is required to be done according to specific parameters (40 CFR 141.24(f)).	Verify that groundwater systems take a minimum of one sample at every entry point of the distribution system which is representative of each well after treatment. Verify that surface water systems (or combined surface/ground) take a mini mum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment. (NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.) Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions. Verify that each community water system takes four consecutive quarterly samples for each contaminant, except vinyl chlorides. (NOTE: If the initial monitoring for contaminants is completed by December 1992 and none of the contaminants listed are found, then each system shall take one sample annually starting with the initial compliance period.) (NOTE: After a minimum of 3 yr of sampling, the state may reduce the number of samples to one each compliance period.) Verify that, if a contaminant, except vinyl chloride, is detected at a level exceeding 0.0005 mg/L in any sample, the system monitors quarterly at each sampling point which resulted in a detection. Verify that groundwater systems which have detected one or more of the following two-carbon organic compounds; trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene monitor quarterly for vinyl chlorides at each sampling point at which

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	one or more of the two-carbon organic compounds was detected. Verify that, when the MCLs are exceeded, monitoring is conducted quarterly until the state determines that the system is reliably and consistently below the MCL.
DW.40.6. Monitoring for organic contaminants listed in Table 3 of Appendix 2-1 at community water systems is required to be done according to specific parameters (40 CFR 141.24(h)).	Verify that groundwater systems take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment. Verify that surface water systems (or surface/ground) take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment. (NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.) Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions. Verify that each community water system takes four consecutive quarterly samples for each contaminant during each compliance period starting with the initial compliance period. (NOTE: Systems serving more than 3300 persons, that do not detect a contaminant in the initial compliance period, may reduce sampling to two quarterly samples in 1 yr during each repeat compliance period.) (NOTE: Systems serving less than or equal to 3300 person, that do not detect a contaminant in the initial compliance period, may reduce sampling to one sample during each repeat compliance period.) Verify that, when an organic contaminant is detected (see Appendix 2-4), the system monitors quarterly at each sampling point that resulted in a detection. Verify that, if monitoring results in detection of one or more of aldicarb, aldicarb sulfone, aldicarb sulfoxide, heptachlor, and

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	heptachlor epoxide, then subsequent monitoring analyzes for all related contaminants. (NOTE: The state may reduce the number of samples required and/or the frequency of sampling.)
DW.40.7. Community systems are required to monitor for specific organic and inorganic contaminants (40 CFR 141.6(g)(3), 141.35 and 141.40(a) through 141.40(m)) **[Revised April 1999].**	Verify that monitoring is being done for the following contaminants: chloroform; bromodichloromethane; bromoform; chlorodibromomethane; dibromomethane; m-dichlorobenzene; 1,1-dichloropropene; 1,1-dichloroethane; 1,1,2,2-tetrachloroethane; 1,3-dichloropropane; chloromethane; bromomethane; 1,2,3-trichloropropane; 1,1,1,2-tetrachloroethane; chloroethane; 2,2,-dichloropropane; o-chlorotoluene; p-chlorotoluene; bromobenzene; 1,3-dichloropropene, aldicarb, aldicarb sulfone, aldicarb sulfoxide. Verify that surface water systems sample at points in the distribution system that are representative of each water source or at entry point to the distribution system after any application of treatment. Verify that, for surface water systems, the minimum number of samples taken is 1 yr of quarterly samples per water system. Verify that groundwater systems sample at points of entry to the distribution system, representative of each well after any application of treatment. Verify that, for groundwater systems, the minimum number of samples taken is one sample taken per entry point to the distribution system. Verify that initial monitoring was done by the dates specified in the following, and that all community and nontransient, noncommunity water systems repeat the monitoring every 5 yr after the specified dates: Number of persons served — Monitoring To Begin No Later Than: Over 10,000 — 1 January 1988 3300 to 10,000 — 1 January 1989 less than 3300 — 1 January 1991. (NOTE: Systems serving 10,000 or fewer persons are not required to monitor for the contaminants in this section after December 1998.) (NOTE: Public water systems may use monitoring data collected any time after 1 January 1983 to meet the requirements for unregulated

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	monitoring, provided the monitoring program was consistent with these requirements. Additionally, the results of USEPA's Groundwater Supply Survey may be used in a similar manner for systems supplied by a single well.) (NOTE: The state may require monitoring of additional contaminants.) (NOTE: Instead of doing the monitoring required here, a community water system serving fewer than 150 service connections may send a letter to the state by 1 January 1991 stating that the system is available for sampling.) Verify that the systems users are notified of the availability of the results of sampling. Verify that copies of the monitoring results are sent within 30 days after public notification.
DW.40.8. Monitoring of specific contaminants must be completed by 31 December 1995 (40 CFR 141.35 and 141.40(n)).	Verify that the substances listed in Appendix 2-5 are monitored for by 31 December 1995. Verify that each community water systems takes four consecutive quarterly samples for the unregulated organic contaminants listed in Appendix 2-5 at each sampling point and reports the results to the state. Verify that each community water system takes one sample at each sampling points for the unregulated inorganic compounds listed in Appendix 2-5 and reports the results to the state. Verify that groundwater systems take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment and that each sample is taken from the same sampling point unless conditions make another sampling point more representative of each source or treatment. Verify that surface water systems, including systems with a combination of surface and ground sources, take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment and that each sample is taken from the same sampling point unless conditions make another sampling point more representative of each source or treatment. Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at the entry point to the distribution system during periods of normal

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	operating conditions. Verify that the facility notifies the systems users of the availability of the results of sampling. Verify that the facility sends copies of the monitoring results within 30 days after public notification.
DW.40.9. Community water systems, except as defined as exempted water systems, are required to monitor for total coliforms at a frequency based on the population served by the system (40 CFR 141.21(a)(2) and 141.21(a)(4)).	Verify that the facility's community water systems is sampling according to the schedule in Appendix 2-6. Verify that samples are collected at regular time intervals throughout the month;. (NOTE: A system which uses only groundwater (except groundwater under the direct influence of surface water) and serves 4900 persons or fewer may collect all required samples in a single day if they are taken from different sites.)
DW.40.10. Sampling for turbidity is required to be done at community water systems which must install filtration according to a specific schedule until the time at which the systems installs filtration (40 CFR 141.22).	Verify that suppliers of water for community water systems sample for turbidity at a representative entry point to the water distribution system at least once daily. Verify that, when the turbidity levels are exceeded, immediate resampling is done. Verify that the state is notified within 48 h. (NOTE: These systems must monitor for turbidity according to 40 CFR 141.73 and 141.74 after installation of filtration. See checklist item DW.20.2.)
DW.40.11. Facilities are required to monitor for radioactivity in community water systems (40 CFR 141.26).	Verify that compliance for standards of gross alpha particle activity, radium-226, and radium-228 are based on an annual composite of four consecutive samples that are obtained at quarterly intervals or the average of the analyses of four samples obtained at quarterly intervals. (NOTE: A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analysis if the measured gross alpha particle activity does not exceed 5 pCi/L at a confidence level of 95 percent.) Verify that, when the gross alpha particle activity exceeds 5 pCi/L, the same or an equivalent sample is analyzed for radium-226 and if the concentration of radium-226 exceeds 3 pCi/L, the same or equivalent

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	sample is analyzed for radium-228. Verify that suppliers of water monitor for gross alpha particle activity, radium-226, and radium-228 every 4 yr and within 1 yr of the introduction of a new water source for a community water system. (NOTE: The state has the power to order additional samples, waive required samples, and impose additional requirements.) Verify that, if the MCL for gross alpha particle activity or total radium is exceeded and the facility is the supplier of a community water system, the installation notifies the state and the public of the exceedence. Verify that systems using surface water sources and serving more than 100,000 persons are initially monitored quarterly for compliance with man made radioactivity limitations and after the initial analysis, monitoring is done at least every 4 yr. Verify that suppliers of any community water system using waters contaminated by nuclear facilities initiate quarterly monitoring for gross beta particle and iodine-131 radioactivity and annual monitoring for strontium-90 and tritium.
DW.40.12. Facilities with community water systems that add a disinfectant to the water are required to analyze for TTHM (40 CFR 141.30) **[Revised January 1999].**	(NOTE: The minimum number of samples that is required is based on the number of treatment plants used by the system.) Verify that community water systems serving a population of 10,000 or more individuals that adds a disinfectant to the water and uses surface water sources or only groundwater sources analyze for total TTHM on a quarterly basis on at least four samples. (NOTE: The state may reduce monitoring frequency.) (NOTE: These requirements apply to community water systems that are required to perform disinfection/filtration and that serve a population of 10,000 or more until 16 December 2001. The requirements also apply to community water systems that use only groundwater not under the direct influence of surface water that add a disinfectant (oxidant) in any part of the treatment process and serve a population of 10,000 or more until 16 December 2003. After 16 December 2003, this is no longer applicable.)
DW.40.13. Suppliers of water for community public water systems are required to analyze for	Verify that one sample is taken per plant at the entry point of the distribution system annually for systems using surface water in whole or in part and every 3 yr for systems using solely groundwater

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sodium (40 CFR 141.41).	sources. Verify that the results of the sampling were reported to the USEPA and/or state within 10 days following the end of the required monitoring period or within the first 10 days of the month following the month in which the sample was taken.
DW.40.14. Suppliers of water for community water systems shall collect samples from representative entry points to the water distribution system and analyze for corrosivity (40 CFR 141.42).	Verify that the supplier collects two samples per plant for analyses for each plant using surface water sources wholly or in part. Verify that the samples are taken once in mid-winter and once during mid-summer. Verify that one sample per plant is collected for each plant using groundwater sources. (NOTE: Determination of corrosivity includes measurement of pH, calcium, hardness, alkalinity, temperature, total dissolved solids, and calculation of the Langelier Index.) Verify that the results for the analyses of corrosivity are reported to the USEPA and/or state within the first 10 days of the month following the month in which the sample results were received. (NOTE: The state might require monitoring for additional parameters which may indicate corrosivity, such as sulfates and chlorides.)
DW.40.15. Community water systems that add a chemical disinfectant to	(NOTE: This requirements applies to Subpart H systems serving 10,000 or more persons beginning 16 December 2001. Subpart H systems serving fewer than 10,000 persons and systems using only

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the water in any part of the drinking water process are required to meet specific monitoring requirements for disinfection byproducts and disinfection byproduct precursors (DBPP).(40 CFR 141.130(a)(1), 141.130(b), 141.131, 141.132(a), 141.132(b), and 141.132(d)) **[Added January 1999].**	groundwater not under the direct influence of surface water must comply with this section beginning 16 December 2003.) Verify that all samples are taken during normal operating conditions. (NOTE: Systems may consider multiple wells drawing water from a single aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required, if the state approves.) Verify that monitoring for TTHM and HAA5 is done at the frequency, either routine or reduced as appropriate, outlined in Appendix 13-10. Verify that sample analysis is done using appropriate methodology. Verify that for systems on a reduced monitoring schedule, the average of all samples taken in the year (for systems that must monitor quarterly) or the result of the sample (for systems that must monitor no more frequently than annually) is no more than 0.060 mg/L for TTHMs and 0.045 mg/L HAA5. Verify that, if the required averages for systems on a reduced monitoring schedule are not met, the system returns to routine monitoring in the quarter immediately following the quarter in which the system exceeded the required averages. (NOTE: The state may return a system to routine monitoring at the state's discretion.) Verify that community water systems using chlorine dioxide, for disinfection or oxidation, perform the following monitoring: – daily samples at the entrance to the distribution system plus, when the daily sample exceeds the chlorite MCL, additional samples in the distribution system the following day at the entrance to the distribution system, as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible – a monthly three-sample set in the distribution system near the first customer, at a location representative of average residence time, and at a location reflecting maximum residence time in the distribution system. Verify that daily chlorite monitoring at the entrance to the distribution system is not reduced. (NOTE: Monthly chlorite monitoring in the distribution system may be

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	reduced to one three-sample set per quarter after 1 yr of monitoring where no individual chlorite sample taken in the distribution system exceeds the chlorite MCL and the system has not been required to conduct additional monitoring in response to a exceedance in the daily samples. The system may remain on the reduced monitoring schedule until either any of the three individual chlorite samples taken quarterly in the distribution system exceeds the chlorite MCL or the system is required to conduct additional monitoring in response to a exceedance in the daily samples.) Verify that systems using ozone, for disinfection or oxidation, take one sample per month for each treatment plant in the system using ozone at the entrance to the distribution system, while the ozonation system is operating under normal conditions. (NOTE: Systems required to analyze for bromate may reduce monitoring from monthly to once per quarter, if the system demonstrates that the average source water bromide concentration is < 0.05 mg/L based upon representative monthly bromide measurements for 1 yr. The system may remain on reduced bromate monitoring until the running annual average source water bromide concentration, computed quarterly, is =/> 0.05 mg/L based upon representative monthly measurements. If the running annual average source water bromide concentration is >/= 0.05 mg/L, the system must resume routine monitoring.) Verify that Subpart H systems that use conventional filtration treatment monitor for TOC no later than the point of combined filter effluent turbidity monitoring and representative of the treated water. Verify that all systems using conventional filtration also monitor for TOC in the source water prior to any treatment at the same time as monitoring for TOC in the treated water. (NOTE: These samples (source water and treated water) are referred to as paired samples. At the same time as the source water sample is taken, all systems must monitor for alkalinity in the source water prior to any treatment. Systems must take one paired sample and one source water alkalinity sample per month per plant at a time representative of normal operating conditions and influent water quality.) (NOTE: Subpart H systems with an average treated water TOC of less than 2.0 mg/L for 2 consecutive years, or less than 1.0 mg/L for one year, may reduce monitoring for both TOC and alkalinity to one paired sample and one source water alkalinity sample per plant per quarter. The system must revert to routine monitoring in the month

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	following the quarter when the annual average treated water TOC >/= 2.0 mg/L.)
DW.40.16. Community water systems that add a chemical disinfectant to the water in any part of the drinking water process are required to meet specific monitoring requirements for disinfection residuals (40 CFR 141.130(a)(1), 141.130(b), 141.131, 141.132(a)(1), and 141.132(c)) **[Added January 1999].**	(NOTE: This requirements applies to Subpart H systems serving 10,000 or more persons beginning 16 December 2001. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning 16 December 2003.) Verify that all samples are taken during normal operating conditions. Verify that sample analysis is done using appropriate methodology. Verify that systems using chlorine and/or chloramines measure the residual disinfectant level at the same points in the distribution system and at the same time as total coliforms are sampled. (NOTE: Subpart H systems may use the results of residual disinfectant concentration sampling conducted under 40 CFR 141.74(b)(6)(i) for unfiltered systems or 40 CFR 141.74(c)(3)(i) for systems that filter, in lieu of taking separate samples.) Verify that monitoring is not reduced when using chlorine and/or chloramine. Verify that systems using chlorine dioxide for disinfection or oxidation take daily samples at the entrance to the distribution system. (NOTE: When a daily sample exceeds the MRDL, samples are required to be taken in the distribution system the following day at the entrance to the distribution system plus three additional chlorine dioxide distribution samples. If chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used to maintain a disinfectant residual in the distribution system and there are no disinfection addition points after the entrance to the distribution system (i.e., no booster chlorination), the system must take three samples as close to the first customer as possible, at intervals of at least 6 h. If chlorine is used to maintain a disinfectant residual in the distribution system and there are one or more disinfection addition points after the entrance to the distribution system (i.e., booster chlorination), the system must take one sample as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible.) Verify that monitoring is not reduced when using chlorine dioxide.

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DW.40.17. Community water systems that add a chemical disinfectant to the water in any part of the drinking water process are required to have a monitoring plan (40 CFR 141.130(a)(1), 141.130(b), 141.131, 141.132(a), and 141.132(f)) **[Added January 1999].**	(NOTE: This requirements applies to Subpart H systems serving 10,000 or more persons beginning 16 December 2001. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning 16 December 2003.) Verify that the system has developed and maintains a monitoring plan. (NOTE: The plan must be made available for inspection by the state and the general public no later than 30 days following applicable compliance dates.) Verify that all Subpart H systems serving more then 3300 people submit a copy of the plan to the state . Verify that the plan includes, at a minimum: – specific locations and schedules for collecting samples for any required parameters – how the system will calculate compliance with MCLs, MRDLs, and treatment techniques – if approved for monitoring as a consecutive system, or as providing water to a consecutive system, the plan reflects the entire distribution system.

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COMMUNITY WATER SYSTEMS **DW.45** **Notifications**	
DW.45.1. Community water systems that exceed the secondary MCL of 2.0 mg/L for fluoride but not the MCL of 4.0 mg/L are required to notify specific individuals (40 CFR 143.5).	Verify that notice has been provided to the following: – all billing units annually – all new billing units at the time service begins – the state public health officer. (NOTE: A copy of the text of the notice is found in 40 CFR 143.5(b).)
DW.45.2. Community water systems are required to deliver to their customers annual consumer confidence reports (40 CFR 141.151 through 141.155) **[Added October 1998]**.	Verify that the community water system delivers annual consumer confidence reports to their customers. Verify that the reports must contain information on the quality of the water delivered by the systems and characterize the risks (if any) from exposure to contaminants detected in the drinking water in an accurate and understandable manner. Verify that one copy is delivered to each customer and the reports are made available to the public upon request. Verify that, no later than the date the system is required to distribute the report to its customers, each community water system mails a copy of the report to the primacy agency, followed within 3 mo by a certification that the report has been distributed to customers, and that the information is correct and consistent with the compliance monitoring data previously submitted to the primacy agency. Verify that, no later than the date the system is required to distribute the report to its customers, each community water system delivers the report to any other agency or clearinghouse identified by the primacy agency. Verify that each community water system serving 100,000 or more persons posts its current year's report to a publicly-accessible site on the Internet.

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	Verify that the community water system keeps copies of the report for no less than 5 yr. (NOTE: See Appendix 2-6a for information on the contents of the report.) (NOTE: Each existing community water system must deliver its first report by 19 October 1999, its second report by 1 July 2000, and subsequent reports by 1 July annually thereafter. The first report must contain data collected during, or prior to, calendar year 1998. Each report thereafter must contain data collected during, or prior to, the previous calendar year. A new community water system must deliver its first report by 1 July of the year after its first full calendar year in operation and annually thereafter. A community water system that sells water to another community water system must deliver the applicable required information to the buyer system: no later than 19 April 1999, by 1 April 2000, and by 1 April annually thereafter; or on a date mutually agreed upon by the seller and the purchaser, and specifically included in a contract between the parties.)

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COMMUNITY WATER SYSTEMS **DW.50** **Lead and Copper**	

DW.50.1. Facilities with community water systems must educate their users about lead in drinking water systems (40 CFR 141.85 and 141.90(f)).	Verify that public education materials are distributed in the following manner when a water system exceeds the lead action level based on tap water samples:
	
	– the material is in the appropriate languages where languages other than English are spoken by a significant proportion of the population
	– within 60 days after exceeding the lead action level:
	  – notices are insert in each customer's water utility bill
	  – information is provided to the editorial departments of the major daily and weekly newspapers circulated in the community
	  – pamphlets or brochures are delivered to pertinent facilities, organizations, schools and medical centers
	  – public service announcements are submitted to at least five of the radio and television stations broadcasting to the community.
	
	Verify that the notification tasks are repeated every 6 mo for as long as a community water system exceeds the lead action level.
	
	(NOTE: The text of written materials and broadcast materials can be found in 40 CFR 141.85(a) and 141.85(b).)
	
	Verify that, by December 31st, any water system that has had to issue public education materials submits a letter to the state indicating that the system has delivered the public education materials as required each year that the levels are exceeded.

DW.50.2. Community	Verify that the concentration of lead does not exceed 0.015 mg/L in

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water systems are required to meet specific standards for lead and copper action levels and reporting requirements when these levels are exceeded (40 CFR 141.80(a)(1) and 141.80(c)).	more than 10 percent of tap water samples collected during any monitoring period. Verify that the concentration of copper does not exceed 1.3 mg/L in more than 10 percent of tap water samples collected during any monitoring period.
DW.50.3. All water systems are required to install and operate optimal corrosion control (40 CFR 141.80(d) and 141.82).	Verify that the water system has corrosion control that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any of the national primary drinking water standards. (NOTE: Please see 40 CFR 141.81 for design details for corrosion control systems in relationship to the size of the water system.)
DW.50.4. Systems that exceed the lead or copper action level are required to implement applicable source water treatment standards (40 CFR 141.80(e) and 141.83).	Verify that systems exceeding the lead or copper action level do lead and copper source water monitoring and make a treatment recommendation to the state within 6 mo after exceeding the lead or copper action level. Verify that, if the state requires the installation of source water treatment, the installation is done within 24 mo after the states initial response. Verify that followup tap water monitoring and source water monitoring is completed within 36 mo after the state's initial response.

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DW.50.5. Facilities with water systems exceeding the lead action level after implementation of corrosion control and source water treatment requirements are required to replace lead service lines (40 CFR 141.80(f) and 141.84).	Verify that lead service line replacement is done according to the schedules and parameters outlined in 40 CFR 141.84. (NOTE: A system is not required to replace an individual lead service line if the lead concentration in all service line samples from that line is less than or equal to 0.015 mg/L.) (NOTE: Replacement of lead service lines can stop when the first draw samples that are collected meet the lead action levels during two consecutive monitoring periods and the system submits the results to the state.)
DW.50.6. Monitoring for lead and copper is required to start on a specified date and be done at a specified number of sites according to the chart in Appendix 2-7 (40 CFR 141.80(h), 141.86(a) through 141.86 (d)).	Verify that Tier 1 sample sites have been selected and sampling started as of the dates indicated in Appendix 2-7. (NOTE: Tier 1 sampling sites consist of single family structures that have one or both of the following: – contain copper pipes with lead solder installed after 1982 or contain lead pipes – are served by a lead service line.) (NOTE: For, Tier 1 sampling sites, when multiple family residences comprise at least 20 percent of the structure served by a water system, the system may include these types of structures in its sampling pool.) Verify that, if the facility has insufficient Tier 1 sampling sites, it completes its sampling pool with Tier 2 sites. (NOTE: Tier 2 sites consist of buildings, including multiple family residences, that contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or are served by a lead service line.) Verify that, if the facility has insufficient Tier 1 and Tier 2 sites, the facility completes its sample with Tier 3 sites. (NOTE Tier 3 sampling sites consist of single family structures that contain copper pipes with lead solder installed before 1983.) Verify that monitoring is done according to the schedules outlined in 40 CFR 141.86 and as required by the state. Verify that the procedures for sampling and granting of variances found in 40 CFR 141.86 are followed. Verify that, for the initial tap sample, all large water systems monitor

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	during two consecutive 6-mo periods and all small and medium-size water systems monitor during each 6-mo period until: – the system exceeds the lead or copper action levels and is then required to implement corrosion control treatment – the system meets the lead and copper action levels during two consecutive 6-mo monitoring periods. (NOTE: A small or medium-sized water system that meets the lead and copper action levels during each of two consecutive 6-mo monitoring periods can reduce the frequency of sampling to once a year. If action levels are met during 3 consecutive years of monitoring, the frequency may be reduced to once every 3 yr.) Verify that, for monitoring after the installation of corrosion control and source water treatment, large systems with optimal corrosion control by 1 January 1997 monitor during two consecutive 6 mo periods by 1 January 1998. Verify that, for monitoring after the installation of corrosion control and source water treatment, small or medium-size systems that install optimal corrosion control within 24 mo after being required to do so by the state, monitor during two consecutive 6-mo periods within 36 mo after being required to install optimal corrosion control treatment. Verify that, for monitoring after the installation of corrosion control and source water treatment required by the state, all systems that install state required systems monitor during 2 consecutive months within 36 mo after the initial state requirement. Verify that, after the state has specified water quality parameter values for optimal corrosion control, monitoring is done during each subsequent 6-mo monitoring period beginning when the state specified the optimal values.
DW.50.7. All large water systems and all small and	Verify that monitoring for water quality parameters is done according

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medium size systems that exceed the lead or copper action level are required to monitor for water quality parameters in addition to lead and copper (40 CFR 141.80(h) and 141.87).	to Appendix 2-8.
DW.50.8. Water systems that fail to meet the lead or copper action levels are required to meet specific monitoring requirements (40 CFR 141.80(h) and 141.88).	Verify that systems that exceed lead or copper action levels at the tap collect one source water sample from each entry point to the distribution system within 6 mo after the exceedence. Verify that systems, which install source water treatment as required by the state, collect an additional source water sample from each entry point to the distribution system during two consecutive 6-mo monitoring periods. Verify that the system monitors as follows when the state specifies maximum permissible source water levels: – once during the 3-yr compliance period for water systems using only groundwater – annually for water systems using surface water or a combination of surface and groundwater. (NOTE: Frequency of monitoring may be reduced by the state upon request.)
DW.50.9. In reference to lead and copper in water systems, all water systems are required to fulfill specific reporting requirements (40 CFR 141.90).	Verify that water systems report sampling results for all tap water samples within the first 10 days following the end of each monitoring period. Verify that water systems report the sampling results for all source water samples within the first 10 days following the end of each source water monitoring period. Verify that the following reports are submitted as applicable: – corrosion control treatment – source water treatment – lead service line replacement – demonstration of public education program.
DW.50.10. All systems subject to the lead and copper requirements are	Verify that records are kept onsite for 12 yr.

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required to retain onsite all the original records of sampling data, analysis, reports, surveys, letters, evaluations, state determinations, and any other pertinent documents for at least 12 yr (40 CFR 141.80(j) and 141.91).	

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NONCOMMUNITY WATER SYSTEMS **DW.60** **Standards** **DW.60.1.** Noncommunity water systems, except as defined under exempted water systems, will not exceed an MCL for nitrate of 10 mg/L (40 CFR 141.11(d) and 141.62(b)).	(NOTE: A noncommunity water system is one which is not a community water system. It is a public water system. Noncommunity water systems are classified as either a nontransient, noncommunity (NTNC) water system, or a transient, noncommunity water system.) Verify that the nitrate level at noncommunity water systems does not exceed 10 mg/L. Verify that the Nitrite level at noncommunity water systems does not exceed 1 mg/L. Verify that the total nitrate and nitrite levels at noncommunity water systems do not exceed 10 mg/L. (NOTE: At the discretion of the state, nitrate levels not to exceed 20 mg/L may be allowed in a noncommunity system if the supplier of the water demonstrates to the satisfaction of the state that: – such water will not be available to children under 6 mo of age – there will be continuous posting of the fact that nitrate levels exceed 10 mg/L and the potential health effects of exposure – local and state public health officials are notified annually of nitrate levels that exceed 10 mg/L – no adverse health effects result.)

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NONCOMMUNITY WATER SYSTEMS **DW.65** **Monitoring/Sampling**	
DW.65.1. Noncommunity water systems, except as defined under exempted water systems, are required to monitor for total coliforms according to a specific schedule (40 CFR 141.21(a)(3)).	Verify that the noncommunity water systems using only groundwater (except groundwater under the direct influence of surface water) and serving 1000 persons or less, monitors each calendar quarter the system provides water to the public. Verify that the following noncommunity water systems are monitoring for total coliforms according to the schedule outlined in Appendix 2-6: – systems using only groundwater (except groundwater under the direct influence of surface water) and serving more than 1000 persons during any month – systems using surface water, in total or in part – systems using groundwater under the direct influence of surface water.
DW.65.2. Sampling for turbidity is required to be done at noncommunity water systems which must install filtration according to a specific schedule until the time at which the systems installs filtration (40 CFR 141.22).	Verify that suppliers of water for noncommunity water systems sample for turbidity at a representative entry point to the water distribution system at least once daily. Verify that, when the turbidity levels are exceeded, immediate resampling is done. Verify that the state is notified within 48 h. (NOTE: These systems must monitor for turbidity according to 40 CFR 141.73 and 141.74 after installation of filtration. See checklist item DW.20.2.)

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DW.65.3. Noncommunity water systems that add a chemical disinfectant to the water in any part of the drinking water process are required to meet specific monitoring requirements for disinfection byproducts and disinfection byproduct precursors (DBPP).(40 CFR 141.130(a)(1), 141.130(b), 141.131, 141.132(a), 141.132(b)(1), and 141.132(d)) **[Added January 1999].**	(NOTE: This requirements applies to Subpart H systems serving 10,000 or more persons beginning 16 December 2001. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning 16 December 2003.) Verify that all samples are taken during normal operating conditions. (NOTE: Systems may consider multiple wells drawing water from a single aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required if the state approves.) Verify that monitoring for TTHM and HAA5 is done at the frequency, either routine or reduced as appropriate, outlined in Appendix 13-10. Verify that sample analysis is done using appropriate methodology. Verify that for systems on a reduced monitoring schedule, the average of all samples taken in the year (for systems that must monitor quarterly) or the result of the sample (for systems that must monitor no more frequently than annually) is no more than 0.060 mg/L for TTHMs and 0.045 mg/L HAA5. Verify that, if the required averages for systems on a reduced monitoring schedule are not met, the system returns to routine monitoring in the quarter immediately following the quarter in which the system exceeded the required averages. (NOTE: The State may return a system to routine monitoring at the state's discretion.) Verify that Subpart H systems that use conventional filtration treatment monitor for TOC no later than the point of combined filter effluent turbidity monitoring and representative of the treated water. Verify that all systems using conventional filtration also monitor for TOC in the source water prior to any treatment at the same time as monitoring for TOC in the treated water. (NOTE: These samples (source water and treated water) are referred to as paired samples. At the same time as the source water sample is taken, all systems must monitor for alkalinity in the source water prior to any treatment. Systems must take one paired sample and one source water alkalinity sample per month per plant at a time representative of normal operating conditions and influent water

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	quality.) (NOTE: Subpart H systems with an average treated water TOC of less than 2.0 mg/L for 2 consecutive years, or less than 1.0 mg/L for 1 yr, may reduce monitoring for both TOC and alkalinity to one paired sample and one source water alkalinity sample per plant per quarter. The system must revert to routine monitoring in the month following the quarter when the annual average treated water TOC >/= 2.0 mg/L.)
DW.65.4. Noncommunity water systems that add a chemical disinfectant to the water in any part of the drinking water process are required to meet specific monitoring requirements for disinfection residuals (40 CFR 141.130(a)(1), 141.130(b), 141.131, 141.132(a), and 141.132(c)) **[Added January 1999].**	(NOTE: This requirements applies to Subpart H systems serving 10,000 or more persons beginning 16 December 2001. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning 16 December 2003.) Verify that all samples are taken during normal operating conditions. (NOTE: Systems may consider multiple wells drawing water from a single aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required if the State approves.) Verify that sample analysis is done using appropriate methodology. Verify that systems using chlorine and/or chloramines measure the residual disinfectant level at the same points in the distribution system and at the same time as total coliforms are sampled. (NOTE: Subpart H systems may use the results of residual disinfectant concentration sampling conducted under 40 CFR 141.74(b)(6)(i) for unfiltered systems or 40 CFR 141.74(c)(3)(i) for systems which filter, in lieu of taking separate samples.) Verify that monitoring is not reduced when using chlorine and/or chloramine. Verify that systems using chlorine dioxide for disinfection or oxidation take daily samples at the entrance to the distribution system. (NOTE: When a daily sample exceeds the MRDL, samples are required to be taken in the distribution system the following day at the entrance to the distribution system plus three additional chlorine dioxide distribution samples. If chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used to maintain a disinfectant residual in the distribution system and there are no disinfection addition points after

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	the entrance
	to the distribution system (i.e., no booster chlorination), the system must take three samples as close to the first customer as possible, at intervals of at least 6 h. If chlorine is used to maintain a disinfectant residual in the distribution system and there are one or more disinfection addition points after the entrance to the distribution system (i.e., booster chlorination), the system must take one sample as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible.) Verify that monitoring is not reduced when using chlorine dioxide.
DW.65.5. Noncommunity water systems that add a chemical disinfectant to the water in any part of the drinking water process are required to have a monitoring plan (40 CFR 141.130(a)(1), 141.130(b), 141.131, 141.132(a), and 141.132(f)) **[Added January 1999].**	(NOTE: This requirements applies to Subpart H systems serving 10,000 or more persons beginning 16 December 2001. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning 16 December 2003.) Verify that the system has developed and maintains a monitoring plan. (NOTE: The plan must be made available for inspection by the state and the general public no later than 30 days following applicable compliance dates.) Verify that all Subpart H systems serving more then 3,300 people submit a copy of the plan tot he state . Verify that the plan includes, at a minimum: – specific locations and schedules for collecting samples for any required parameters – how the system will calculate compliance with MCLs, MRDLs, and treatment techniques – if approved for monitoring as a consecutive system, or as providing water to a consecutive system, the plan reflects the entire distribution system.

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NONTRANSIENT/ NONCOMMUNITY (NTNC) WATER SYSTEMS **DW.76** **Standards**	(NOTE: An NTNC water system must also meet the standards for a public water system and a noncommunity water system. An NTNC is defined as a water system that is not a community water system that regularly serves at least 25 of the same persons over 6 mo of the year.)
DW.76.1. NTNC water systems, except as defined under exempted water systems, are required to meet specific MCLs for organic contaminants, inorganic contaminants and microbiological contaminants (40 CFR 141.60 through 141.63).	Verify that the standards outlined in Appendix 2-1 and 2-2 are met. Verify that systems, which collect at least 40 bacteriological samples per month, have no more than 5 percent of the samples collected during a month that are total coliform positive. Verify that systems, which collect less than 40 bacteriological samples per month, have no more than one sample collected per month that is total coliform positive. Verify that there are no fecal coliform-positive repeat sampling or *E. coli*-positive repeat samples, or any total coliform-positive repeat samples following a fecal coliform-positive or *E. coli*-positive routine sample.
DW.76.2. NTNC water systems are required to meet specific MCLs and MRDLs related to disinfection (40 CFR 141.64 and 141.65) **[Added January 1999].**	Verify that NTNC water systems meet the MCL for disinfection byproducts and the MRDLs outlined in Appendix 2-9. (NOTE: This requirements applies to Subpart H systems serving 10,000 or more persons beginning 16 December 2001. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning 16 December 2003.) (NOTE: A system that is installing GAC or membrane technology to comply with MCL requirements may apply to the State for an extension of up to 24 mo past the compliance dates, but not beyond 16 December 2003. In granting the extension, states must set a schedule for compliance and may specify any interim measures that the system must take. Failure to meet the schedule or interim treatment requirements constitutes a violation of a National Primary Drinking Water Regulation.)

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NTNC WATER SYSTEMS **DW.77** **Monitoring/Sampling** **DW.77.1.** Facilities with NTNC water systems are required to meet specific monitoring requirements for inorganic contaminants (40 CFR 141.23(a)).	Verify that groundwater systems: – take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (a sampling point) beginning in the compliance period starting 1 January 1993 – take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant. Verify that surface water systems: – take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point that is representative of each source after treatment (a sampling point) beginning in the compliance period starting 1 January 1993 – takes each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant. (NOTE: In relation to these requirements, surface water systems include systems with a combination of surface and ground sources.) Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions. (NOTE: The state may reduce the total number of samples which must be analyzed by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed if the detection limit of the method used for analysis is less than one fifth the MCL and compositing is done in a laboratory.) Verify that, if the concentration in a composite sample is greater than

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	or equal to one-fifth of the MCL of any inorganic chemical, a followup sample is analyzed within 14 days from each sampling point included in the composite and analyzed for the contaminants which exceeded one fifth of the MCL in the composite sample. (NOTE: Detection limits for each analytical method and MCL for each inorganic contaminant are listed in Appendix 2-3.) Verify that, for groundwater systems, inorganic monitoring is repeated at least once every compliance period (every 3 yr), and samples are taken quarterly for at least two quarters if a MCL is violated. Verify that, for surface water systems, inorganic sampling is repeated annually and samples are taken quarterly for at least four quarters if a MCL is violated. (NOTE: The state may issue a waiver reducing the required monitoring.)
DW.77.2. Facilities with NTNC water systems are required to meet specific monitoring requirements for asbestos (40 CFR 141.23(b)).	Verify that asbestos is monitored during the first 3-yr compliance period of each 9-yr compliance cycle starting 1 January 1993. (NOTE: The facility may apply to the state for a waiver of monitoring if they believe asbestos is not an issue.) Verify that, if the system is vulnerable to asbestos contamination only because of corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur. Verify that, if the system is vulnerable to asbestos contamination due to both its source water supply and corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where contamination is most likely to occur. Verify that, when the MCL is exceeded, monitoring is done quarterly.
DW.77.3. Facilities with NTNC water systems are	Verify that monitoring is done as follows:

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required to meet specific monitoring requirements for antimony, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, and thallium (40 CFR 141.23(c)). **DW.77.4.** NTNC water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels according to specific parameters (40 CFR 141.23(d) and 141.23(e)).	– groundwater systems: take one sample at each sampling point during each compliance period – surface water systems (or combined surface/ground): take one sample annually at each sampling point – when MCLs are exceeded, monitoring is done quarterly. (NOTES: States may grant a public water system a waiver for the monitoring of cyanide.) Verify that the following schedules are met for monitoring of nitrate: – NTNC water systems served by groundwater monitor annually starting 1 January 1993 – NTNC water systems served by surface water monitor quarterly starting 1 January 1993. (NOTE: States may allow surface water systems to reduce annual sampling if analytical results from four consecutive quarters are less than 50 percent of the MCL.) Verify that NTNC water systems do repeat monitoring quarterly for at least 1 yr following any one sample in which the concentration exceeds more than 50 percent of the MCL. (NOTE: States may allow groundwater systems to return to annual sampling if four consecutive quarters results are consistently and reliably below the MCL.) (NOTE: After the initial round of quarterly sampling is completed, each NTNC system, which is monitoring annually, shall take the subsequent samples during the quarters which previously resulted in the highest analytical result.) Verify that NTNC water systems take one sample at each sampling point in the compliance period beginning 1 January 1993 and ending 31 December 1995 for nitrite. (NOTE: After the initial sample, systems where an analytical result for nitrite is less than 50 percent of the MCL will monitor at the frequency specified by the state.) Verify that NTNC systems repeat monitoring for nitrites quarterly for at least 1 yr after any one sample is greater than 50 percent of the MCL. Verify that systems, which are monitoring annually for nitrites, take each subsequent sample during the quarters which previously resulted

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	in the highest analytical result. Verify that, when nitrate or nitrite samples indicate an exceedence of the MCL, a confirmation sample is taken within 24 h of receipt of the results. (NOTE: If the system is unable to take a confirmation sample within 24 h, it must notify consumers of the exceedence.)
DW.77.5. Beginning with the initial compliance period, monitoring of the contaminants listed in Table 2 of Appendix 2-1 at NTNC water systems is required to be done according to specific parameters (40 CFR 141.24(f)).	Verify that groundwater systems take a minimum of one sample at every entry point of the distribution system which is representative of each well after treatment. Verify that surface water systems (or combined surface/ground) take a mini mum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment. (NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.) Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions. Verify that each NTNC water system takes four consecutive quarterly samples for each contaminant, except vinyl chlorides. (NOTE: If the initial monitoring for contaminants is completed by December 1992 and none of the contaminants listed are found, then each system shall take one sample annually starting with the initial compliance period.) (NOTE: After a minimum of 3 yr of sampling, the state may reduce the number of samples to one each compliance period.) Verify that, if a contaminant, except vinyl chloride, is detected at a level exceeding 0.0005 mg/L in any sample, the system monitors quarterly at each sampling point which resulted in a detection. Verify that groundwater systems, which have detected one or more of the following two-carbon organic compounds; trichloroethylene,

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	tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene, monitor quarterly for vinyl chlorides at each sampling point at which one or more of the two-carbon organic compounds was detected. Verify that, when the MCLs are exceeded, monitoring is conducted quarterly until the state determines that the system is reliably and consistently below the MCL.
DW.77.6. Monitoring for organic contaminants listed in Table 3 of Appendix 2-1 at NTNC water systems is required to be done according to specific parameters (40 CFR 141.24(h)).	Verify that groundwater systems take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment. Verify that surface water systems (or surface/ground) take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment. (NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.) Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions. Verify that each NTNC water system takes four consecutive quarterly samples for each contaminant during each compliance period starting with the initial compliance period. (NOTE: Systems serving more than 3300 persons that do not detect a contaminant in the initial compliance period may reduce sampling to two quarterly samples in 1 yr during each repeat compliance period.) (NOTE: Systems serving less than or equal to 3300 person that do not detect a contaminant in the initial compliance period may reduce sampling to one sample during each repeat compliance period.) Verify that, when an organic contaminant is detected (see Appendix 2-4), the system monitors quarterly at each sampling point that resulted in a detection. Verify that, if monitoring results in detection of one or more of aldicarb, aldicarb sulfone, aldicarb sulfoxide, heptachlor, and heptachlor epoxide, subsequent monitoring analyzes for all related

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	contaminants. (NOTE: The state may reduce the number of samples required and/or the frequency of sampling.)
DW.77.7. NTNC water systems are required to monitor for specific organic and inorganic contaminants (40 CFR 141.6(g)(3), 141.35 and 141.40(a) through 141.40(m)) **[Revised April 1999].**	Verify that monitoring is being done for the following contaminants: chloroform; bromodichloromethane; bromoform; chlorodibromomethane; dibromomethane; m-dichlorobenzene; 1,1-dichloropropene; 1,1-dichloroethane; 1,1,2,2-tetrachloroethane; 1,3-dichloropropane; chloromethane; bromomethane; 1,2,3-trichloropropane; 1,1,1,2-tetrachloroethane; chloroethane; 2,2,-dichloropropane; o-chlorotoluene; p-chlorotoluene; bromobenzene; 1,3-dichloropropene, aldicarb, aldicarb sulfone, aldicarb sulfoxide. Verify that surface water systems sample at points in the distribution system that are representative of each water source or at entry point to the distribution system after any application of treatment. Verify that, for surface water systems, the minimum number of samples taken is 1 yr of quarterly samples per water system. Verify that groundwater systems sample at points of entry to the distribution system, representative of each well after any application of treatment. Verify that for groundwater systems the minimum number of samples taken is one sample taken per entry point to the distribution system. Verify that initial monitoring was done by the dates specified in the following, and that all NTNC water systems repeat the monitoring every 5 yr after the specified dates: Number of persons served: — Monitoring to begin no later than: Over 10,000 — 1 January 1988 3300 to 10,000 — 1 January 1989 less than 3300 — 1 January 1991. (NOTE: Systems serving 10,000 or fewer persons are not required to monitor for the contaminants in this section after 31 December 1998.) (NOTE: NTNC water systems may use monitoring data collected anytime after 1 January 1983 to meet the requirements for unregulated monitoring, provided the monitoring program was consistent with these requirements. Additionally, the results of USEPA's Groundwater Supply Survey may be used in a similar manner for systems supplied by a single well.)

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	(NOTE: The state may require monitoring of additional contaminants.) (NOTE: Instead of doing the monitoring required here, a NTNC water system serving fewer than 150 service connections may send a letter to the state by 1 January 1991 stating that the system is available for sampling.) Verify that the facility notifies the systems users of the availability of the results of sampling. Verify that the facility sends copies of the monitoring results within 30 days after public notification.
DW.77.8. Monitoring of specific contaminants at NTNCs must be completed by 31 December 1995 (40 CFR 141.35 and 141.40(n)).	Verify that the substances listed in Appendix 2-5 are monitored for by 31 December 1995. Verify that each NTNC water system takes four consecutive quarterly samples for the unregulated organic contaminants listed in Appendix 2-5 at each sampling point and reports the results to the state. Verify that each NTNC water system takes one sample at each sampling points for the unregulated inorganic compounds listed in Appendix 2-5 and reports the results to the state. Verify that groundwater systems take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment and that each sample is taken from the same sampling point unless conditions make another sampling point more representative of each source or treatment. Verify that surface water systems, including systems with a combination of surface and ground sources, take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment and that each sample is taken from the same sampling point unless conditions make another sampling point more representative of each source or treatment. Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at the entry point to the distribution system during periods of normal operating conditions. Verify that the facility notifies the systems users of the availability of the results of sampling.
DW.77.9. NTNC water	(NOTE: This requirements applies to Subpart H systems serving

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systems that adds ozone or chlorine dioxide to the water in any part of the drinking water process are required to meet specific monitoring requirements (40 CFR 141.130(a)(1), 141.130(b), 141.131, 141.132(a), 141.132(b)(2) and 141.132(b)(3)) **[Added January 1999].**	10,000 or more persons beginning 16 December 2001. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning 16 December 2003.) Verify that all samples are taken during normal operating conditions. (NOTE: Systems may consider multiple wells drawing water from a single aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required, if the state approves.) Verify that NTNC water systems using chlorine dioxide, for disinfection or oxidation, perform the following monitoring for chlorite: – daily samples at the entrance to the distribution system plus when the daily sample exceeds the chlorite MCL, additional samples in the distribution system the following day at the entrance to the distribution system, as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible – a monthly three-sample set in the distribution system near the first customer, at a location representative of average residence time, and at a location reflecting maximum residence time in the distribution system. Verify that daily chlorite monitoring at the entrance to the distribution system is not reduced. (NOTE: Monthly chlorite monitoring in the distribution system may be reduced to one three-sample set per quarter after 1 yr of monitoring where no individual chlorite sample taken in the distribution system exceeds the chlorite MCL and the system has not been required to conduct additional monitoring in response to a exceedance in the daily samples. The system may remain on the reduced monitoring schedule until either any of the three individual chlorite samples taken quarterly in the distribution system exceeds the chlorite MCL or the system is required to conduct additional monitoring in response to a exceedance in the daily samples.) Verify that systems using ozone, for disinfection or oxidation, take one sample per month for each treatment plant in the system using ozone at the entrance to the distribution system while the ozonation system is operating under normal conditions.

COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	(NOTE: Systems required to analyze for bromate may reduce monitoring from monthly to once per quarter, if the system demonstrates that the average source water bromide concentration is < 0.05 mg/L based upon representative monthly bromide measurements for 1 yr. The system may remain on reduced bromate monitoring until the running annual average source water bromide concentration, computed quarterly, is =/> 0.05 mg/L based upon representative monthly measurements. If the running annual average source water bromide concentration is >/= 0.05 mg/L, the system must resume routine monitoring.)

COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
NTNC WATER SYSTEMS **DW.78** **Lead and Copper**	

DW.78.1. Facilities with NTNC water systems must notify their users about an exceedence of lead in drinking water systems (40 CFR 141.85 and 141.90(f)).	Verify that public education materials are distributed in the following manner when a water system exceeds the lead action level based on tap water samples:
	
	– the material is in the appropriate languages where languages other than English are spoken by a significant proportion of the population
	– within 60 days after exceeding the lead action level:
	  – notices are insert in each customer's water utility bill
	  – information is provided to the editorial departments of the major daily and weekly newspapers circulated in the community
	  – pamphlets or brochures are delivered to pertinent facilities, organizations, schools and medical centers
	  – public service announcements are submitted to at least five of the radio and television stations broadcasting to the community.
	
	Verify that the notification tasks are repeated every 6 mo for as long as a community water system exceeds the lead action level.
	
	Verify that an NTNC water system delivers the public education materials by posting informational posters and distributing brochures.
	
	Verify that an NTNC water system repeats distribution of information at least once each calendar year in which the system exceeds the lead action level.
	
	(NOTE: The text of written materials and broadcast materials can be found in 40 CFR 141.85(a) and 141.85(b).)
	
	Verify that, by 31 December, any water system that has had to issue public education materials submits a letter to the state indicating that the system has delivered the public education materials as required each year that the levels are exceeded.

DW.78.2. NTNC water	Verify that the concentration of lead does not exceed 0.015 mg/L in

COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
systems are required to meet specific standards for lead and copper action levels and reporting requirements when these levels are exceeded (40 CFR 141.80(a)(1) and 141.80(c)).	more than 10 percent of tap water samples collected during any monitoring period. Verify that the concentration of copper does not exceed 1.3 mg/L in more than 10 percent of tap water samples collected during any monitoring period.
DW.78.3. NTNC water systems are required to install and operate optimal corrosion control (40 CFR 141.80(d) and 141.82).	Verify that the water system has corrosion control that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any of the national primary drinking water standards. (NOTE: Please see 40 CFR 141.81 for design details for corrosion control systems in relationship to the size of the water system.)
DW.78.4. NTNC systems that exceed the lead or copper action level are required to implement applicable source water treatment standards (40 CFR 141.80(e) and 141.83).	Verify that systems exceeding the lead or copper action level do lead and copper source water monitoring and make a treatment recommendation to the state within 6 mo after exceeding the lead or copper action rate. Verify that, if the state requires the installation of source water treatment, the installation is done within 24 mo after the state's initial response. Verify that followup tap water monitoring and source water monitoring is completed within 36 mo after the state's initial response.
DW.78.5. Facilities with NTNC water systems exceeding the lead action level after implementation of corrosion control and source water treatment requirements are required to replace lead service lines (40 CFR 141.80(f) and 141.84).	Verify that lead service line replacement is done according to the schedules and parameters outlined in 40 CFR 141.84. (NOTE: A system is not required to replace an individual lead service line if the lead concentration in all service line samples from that line is less than or equal to 0.015 mg/L.) (NOTE: Replacement of lead service lines can stop when the first draw samples that are collected meet the lead action levels during two consecutive monitoring periods and the system submits the results to the state.)
DW.78.6. Monitoring for	Verify that Tier 1 sample sites have been selected and sampling

COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
lead and copper is required to start on a specified date and be done at a specified number of sites according to the chart in Appendix 2-7 (40 CFR 141.80(g), 141.86(a) through 141.86(d)).	started as of the dates indicated in Appendix 2-7. (NOTE: Tier 1 sampling sites consist of buildings that contain copper pipes with lead solder installed after 1982 or contain lead pipe; and/or are served by a lead service line.) (NOTE: If there are insufficient Tier 1 sites, the sampling pool should be completed with sampling sites that contain copper pipes with lead solder installed before 1983.) Verify that the procedures for sampling and granting of variances found in 40 CFR 141.86 are followed. Verify that for the initial tap sample, all large water systems monitor during two consecutive 6-mo periods and all small and medium-size water systems monitor during each 6-mo period until: – the system exceeds the lead or copper action levels and is then required to implement corrosion control treatment – the system meets the lead and copper action levels during two consecutive 6-mo monitoring periods. (NOTE: A small or medium-sized water system that meets the lead and copper action levels during each of two consecutive 6-mo monitoring periods can reduce the frequency of sampling to once a year. If action levels are met during 3 consecutive years of monitoring, the frequency may be reduced to once every 3 yr.) Verify that, for monitoring after the installation of corrosion control and source water treatment, large systems with optimal corrosion control, by 1 January 1997 monitor during two consecutive 6-mo periods by 1 January 1998. Verify that, for monitoring after the installation of corrosion control and source water treatment, small or medium-size systems that install optimal corrosion control within 24 mo after being required to do so by the state, monitor during two consecutive 6-mo periods within 36 mo after being required to install optimal corrosion control treatment. Verify that, for monitoring after the installation of corrosion control and source water treatment required by the state, all systems that install state required systems, monitor during 2 consecutive months within 36 mo after the initial state requirement. Verify that, after the state has specified water quality parameter values for optimal corrosion control, that monitoring is done during

COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	each subsequent 6-mo monitoring period beginning when the state specified the optimal values.
DW.78.7. All large water systems and all small and medium size systems that exceed the lead or copper action level are required to monitor for water quality parameters in addition to lead and copper (40 CFR 141.40(h) and 141.87).	Verify that monitoring for water quality parameters is done according to Appendix 2-8.
DW.78.8. NTNC water systems that fail to meet the lead or copper action levels are required to meet specific monitoring requirements (40 CFR 141.80(h) and 141.88).	Verify that systems, which exceed lead or copper action levels at the tap, collect one source water sample from each entry point to the distribution system within 6 mo after the exceedence. Verify that systems, which install source water treatment as required by the state, collects an additional source water sample from each entry point to the distribution system during two consecutive 6-mo monitoring periods. Verify that the system monitors as follows when the state specifies maximum permissible source water levels: – once during the 3-yr compliance period for water systems using only groundwater – annually for water systems using surface water or a combination of surface and groundwater. (NOTE: Frequency of monitoring may be reduced by the state upon request.)
DW.78.9. In reference to lead and copper in NTNC water systems, all water systems are required to fulfill specific reporting requirements (40 CFR 141.90).	Verify that water systems report sampling results for all tap water samples within the first 10 days following the end of each monitoring period. Verify that water systems report the sampling results for all source water samples within the first 10 days following the end of each source water monitoring period. Verify that the following reports are submitted as applicable: – corrosion control treatment – source water treatment

COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	– lead service line replacement – demonstration of public education program.
DW.78.10. All NTNC systems subject to the lead and copper requirements are required to retain onsite all the original records of sampling data, analysis, reports, surveys, letters, evaluations, state determinations, and any other pertinent documents for at least 12 yr (40 CFR 141.80(j) and 141.91).	Verify that records are kept onsite for 12 yr.

COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
DW.80 **TRANSIENT/ NONCOMMUNITY WATER SYSTEMS**	(NOTE: A transient water system must also meet the requirements for a public water system and for a noncommunity water systems. It is defined as a noncommunity water system that does not regularly serve at least 25 of the same person over 6 mo per year.)
DW.80.1. Transient, noncommunity water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels according to specific parameters (40 CFR 141.23(d) and 141.23(e)).	Verify that transient, noncommunity water systems monitor annually for nitrate starting 1 January 1993. Verify that, when the MCL for nitrate is exceeded, transient, noncommunity water systems do repeat monitoring quarterly for at least 1 yr following any one sample in which the concentration exceeds more than 50 percent of the MCL. Verify that transient, noncommunity water systems take one sample at each sampling point in the compliance period beginning 1 January 1993 and ending 31 December 1995 for nitrite. (NOTE: After the initial sample, systems where an analytical result for nitrite is less than 50 percent of the MCLs will monitor at the frequency specified by the state.) Verify that transient, noncommunity systems repeat monitoring for nitrites quarterly for at least 1 yr after any one sample is greater than 50 percent of the MCL. Verify that systems which are monitoring annually for nitrites take each subsequent sample during the quarters which previously resulted in the highest analytical result. Verify that, when nitrate or nitrite samples indicate an exceedence of the MCL, a confirmation sample is taken within 24 h of receipt of the results. (NOTE: If the system is unable to take a confirmation sample within 24 h, it must notify consumers of the exceedence.)

COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
DW.80.2. Transient noncommunity water systems are required to meet specific MRDLs related to disinfection (40 CFR 141.65) **[Added January 1999].**	Verify that transient noncommunity water systems meet the MRDLs outlined in Appendix 2-9. (NOTE: The MCL standards in Appendix 2-9 are not applicable.) (NOTE: This requirement applies to Subpart H systems serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant beginning 16 December 2001. Subpart H systems serving fewer than 10,000 persons and using chlorine dioxide as a disinfectant or oxidant and systems using only groundwater not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with the MRDL beginning 16 December 2003.)

COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
DW.95 **SOLE SOURCE AQUIFER** **DW.95.1.** Projects that may affect the recharge zone or stream flow source zone of a designated sole source aquifer are regulated (40 CFR 149.103 and 149.104).	(NOTE: Currently the only Federally designated sole source aquifers are the Edwards Aquifer in the San Antonio, TX area and the Buried Valley Aquifer System in southwest Ohio.) Determine if the facility is located near a designated sole source aquifer. Determine if the facility uses water from the aquifer, what impact water use may have on the aquifer, and if the water system requires additional treatment to protect the aquifer. Verify that the facility maintains a list of projects for which environmental impact statements will be prepared. Verify that, if any projects may potentially cause direct or indirect contamination through its recharge zone, a petition has been submitted to the USEPA regional administrator.

Appendix 2-1

Primary Drinking Water Standards for Organic Contaminants
[Revised January 1999]

Table 1: MCLs Applicable to Community Water Systems (40 CFR 141.12)

Contaminant	mg/L
Total Trihalomethanes (TTHMs) (the sum of the concentrations of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform) and trichloromethane (chloroform)	0.10

(NOTE: The standard for TTHM only applies to community water systems subject to filtration and disinfection requirements which serve a population of 10,000 people or more until 16 December 2001. This MCL applies to community water systems that use only groundwater not under the direct influence of surface water and serve a population of 10,000 people or more until 16 December 2003. After 16 December 2003, this section is no longer applicable.)

Table 2: MCLs Applicable to Community and Nontransient, Noncommunity Water Systems (40 CFR 141.61(a))

Contaminant	mg/L
1,1-Dichloroethylene	0.007
1,1,1-Trichloroethane	0.20
1,2-Dichloroethane	0.005
1,2-Dichloropropane	0.005
Benzene	0.005
Carbon Tetra chloride	0.005
cis-1,2-Dichloroethylene	0.07
Ethylbenzene	0.7
Monochlorobenzene	0.1
0-Dichlorobenzene	0.6
para-Dichlorobenzene	0.075
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1.0
trans-1,2-Dichloroethylene	0.1
Trichloroethylene	0.005
Vinyl chloride	0.002
Xylenes (total)	10.0
Dichloromethane	0.005*
1,2,4-Trichlorobenzene	0.07*
1,1,2-Trichloroethane	.005*

* The effective date for these MCLs is 17 January 1994

Table 3: MCLs For Synthetic Organic Contaminants Applicable to Community Water Systems and Nontransient, Noncommunity Water Systems (40 CFR 141.61(c))

Contaminant	mg/L
Alachlor	0.002*
Aldicarb	0.003*
Aldicarb sulfoxide	0.004*
Aldicarb sulfone	0.002
Atrazine	0.003
Carbofuran	0.04
Chlordane	0.002
Dibromochloropropane	0.0002
2,4-D	0.07
Ethylene dibromide	0.00005
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Lindane	0.0002
Methoxychlor	0.04
Pentachlorophenol	0.001
Polychlorinated biphenyls	0.0005
Toxaphene	0.003
2,4,5-TP	0.05
Benzo(a)pyrene	0.0002
Delapon	0.2
Di(2-ethythexyl) adipate	0.4
Di(2-ethythexyl) phthalate	0.006
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Glyphosate	0.7
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Oxamyl (Vydate)	0.2
Picloram	0.5
Simazin	0.004
2,3,7,8,-TCDD (Dioxin)	$3. \times 10^{-8}$

*The MCLs for these compounds have been postponed indefinitely in the 27 May 1992 Federal Register.

Appendix 2-2
Primary Drinking Water Standards for Inorganic Contaminants

Table 1: MCLs Applicable Only to Community Water Systems (40 CFR 141.11, 141.12, and 141.62(b)(1))

Contaminant	mg/L
Arsenic	0.05
Fluoride	4.0
Total Trihalomethanes	0.10*

* This MCL only applies to community water systems which serve a population of 10,000 individuals or more and which add a disinfectant (oxidant) to the water in any part of the drinking water treatment process.

Table 2: MCLs Applicable to Community Water Systems and Nontransient, Noncommunity Water Systems (40 CFR 141.62(b)(2) through 141.62(b)(6) and 141.62(b)(10) through 141.62(b)(15))

Contaminant	mg/L
Asbestos	7 million fibers/L (longer than 10
Barium	2.0
Cadmium	0.005
Chromium	0.1
Mercury	0.002
Selenium	0.05
Antimony	0.006
Beryllium	0.004
Cyanide (as free Cyanide)	0.2
Thallium	0.002

Table 3: MCLs Applicable to Community, Nontransient, Noncommunity and Transient Noncommunity Water Systems (40 CFR 141.62(b)(7) through 141.62(b)(9))

Contaminant	mg/L
Nitrate (as N)	10.0
Nitrite (as N)	1.0
Total Nitrate and Nitrite (as N)	10.0

Appendix 2-3

Detection Limitations for Inorganic Contaminants (40 CFR 141.23(a))

(NOTE: These detection limitations apply to Community and NTNC water systems.)

Contaminant	MCL (mg/L)	Analytical Method	Detection Limit (mg/L)
Antimony	0.006	Atomic Absorption Furnace	0.003
		Atomic Absorption: Platform	0.0008[5]
		ICP Mass spectrometry	0.0004
		Hydride Atomic Absorption	0.001
Asbestos	7 MFL[1]	Transmission Electron Microscopy	0.01 million fibers/L
Barium	2.0	Atomic Absorption; furnace technique	0.002
		Atomic Absorption; direct aspiration	0.1
		Inductively Coupled Plasma	0.002(0.001)
Beryllium	0.004	Atomic Absorption, Furnace	0.0002
		Atomic Absorption: Platform	0.00002[5]
		Inductively Coupled Plasma[3]	0.0003
		ICP Mass Spectrometry	0.0003
Cadmium	0.005	Atomic Absorption; furnace technique	0.0001
		Inductively Coupled Plasma[2]	0.001
Chromium	0.1	Atomic Absorption; furnace technique	0.001
		Inductively Coupled Plasma	0.007 (0.001)
Cyanide	0.2	Distillation, Spectrophotometric[3]	0.02
		Distillation, Automated, Spectrophotometric[3]	0.005
			0.05
		Distillation, Selective Electrode[3]	0.02
		Distillation, Amenable, Spectrophotometric[4]	
Mercury	0.002	Manual Cold Vapor Technique	0.0002
		Automated Cold Vapor Technique	0.0002
Nickel	0.1	Atomic Absorption, Furnace	0.001
		Atomic Absorption: Platform	0.0006[5]
		Inductively Coupled Plasma[3]	0.005
		ICP Mass Spectrometry	0.0005
Nitrate	10 as N	Manual Cadmium Reduction	0.01
		Automated Hydrazine Reduction	0.01
		Automated Cadmium Reduction	0.05
		Ion Selective Electrode	1.0
		Ion Chromatography	0.01

Contaminant	MCL (mg/L)	Analytical Method	Detection Limit (mg/L)
Nitrite	1 as N	Spectrophotometric	0.01
		Automated Cadmium Reduction	0.05
		Manual Cadmium Reduction	0.01
		Ion Chromatography	0.004
Selenium	0.05	Atomic Absorption; furnace	0.002
		Atomic Absorption; gaseous hydride	0.002
Thallium	0.002	Atomic Absorption Furnace	0.001
		Atomic Absorption: Platform	0.0007[5]
		ICP-Mass Spectrometry	0.0003

[1] MFL = million fibers per liter > 10 ppm.
[2] Using a 2x preconcentration step as noted in Method 200.7. Lower MDLs may be achieved by using a 4x preconcentration.
[3] Screening method for total cyanides.
[4] Measures "free" cyanides.
[5] Lower MDLs are reported using stabilized temperature graphite furnace atomic absorption.

Appendix 2-4

Detection Limitations
(40 CFR 141.24(h)(18))

(NOTE: These detection limitations apply to Community and NTNC water systems.)

Contaminant	Detection Limit
Alachlor	0.0002
Aldicarb	0.0005
Aldicarb sulfoxide	0.0005
Aldicarb sulfone	0.0008
Atrazine	0.0001
Benzo[a]pyrene	0.00002
Carbofuran	0.0009
Chlordane	0.0002
Dalapon	0.001
1,2-Dibromo-3-chloropropane (DBCP)	0.00002
Di (2-ethylhexyl) adipate	0.0006
Di (2-ethylhexyl) phthalate	0.0006
Dinoseb	0.0002
Diquat	0.0004
2,4-D	0.0001
Endothall	0.009
Endrin	0.00001
Ethylene dibromide (EDB)	0.00001
Glyphosaate	0.006
Heptachlor	0.00004
Heptachlor epoxide	0.00002
Hexachlorobenzene	0.0001
Hexachlorocyclopentadiene	0.0001
Lindane	0.00002
Methoxychlor	0.0001
Oxamyl	0.002
Picloram	0.0001
Pentachlorophenol	0.00004
Polychlorinated biphenyls	0.0001
Simazine	0.00007
Toxaphene	0.001
2,3,7,8-TCDD (Dioxin)	0.000000005
2,4,5-TP	0.0002

Appendix 2-5

Unregulated Organic and Inorganic Contaminants (40 CFR 141.40(n)(11) and 141.40(n)(12))

(NOTE: These unregulated contaminants apply to Community and NTNC water systems.)

Organic Contaminants
Aldicarb
Aldicarb Sulfone
Aldicarb Sulfoxide
Aldrin
Butachlor
Carbaryl
Dicamba
Dieldrin
3-Hydroxycarbofuran
Methomyl
Metolachlor
Metribuzin
Propachlor

Inorganic Contaminants
Sulfate

Appendix 2-6

Coliform Bacteria Sampling Frequency (40 CFR 141.21(a)(2))

(NOTE: This sampling frequency applies to Community and Noncommunity water systems.)

Population Served Per Month	Minimum Number of Samples Per Month
25 to 1000	1
1001 to 2500	2
2501 to 3300	3
3301 to 4100	4
4101 to 4900	5
4901 to 5800	6
5801 to 6700	7
6701 to 7600	8
7601 to 8500	9
8501 to 12,900	10
12,901 to 17,200	15
17,201 to 21,500	20
21,501 to 25,000	25
25,001 to 33,000	30
33,001 to 41,000	40
41,001 to 50,000	50
50,001 to 59,000	60
59,001 to 70,000	70
70,001 to 83,000	80
83,001 to 96,000	90
96,001 to 130,000	100
130,001 to 220,000	120
220,001 to 320,000	150
320,001 to 450,000	180
450,001 to 600,000	210
600,001 to 780,000	240
780,001 to 970,000	270
970,001 to 1,230,000	300
1,230,001 to 1,520,000	330
1,520,001 to 1,850,000	360
1,850,001 to 2,270,000	390
2,270,001 to 3,020,000	420
3,020,001 to 3,960,000	450
3,960,001 or more	480

Appendix 2-6a

Consumer Confidence Report Contents (40 CFR 141.153 and 141.154) [Added January 1999]

- Each report must identify the source(s) of the water delivered by the community water system by providing information on:
    1. The type of the water: e.g., surface water, groundwater; and
    2. The commonly used name (if any) and location of the body (or bodies) of water.

- If a source water assessment has been completed, the report must notify consumers of the availability of this information and the means to obtain it. In addition, systems are encouraged to highlight in the report significant sources of contamination in the source water area if they have readily available information. Where a system has received a source water assessment from the primacy agency, the report must include a brief summary of the system's susceptibility to potential sources of contamination, using language provided by the primacy agency or written by the operator.

- Each report must include the following definitions:
    1. Maximum Contaminant Level Goal or MCLG: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
    2. Maximum Contaminant Level or MCL: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

- A report for a community water system operating under a variance or an exemption issued under 40 CFR 1415 or 1416 of SDWA must include the following definition: Variances and Exemptions: State or USEPA permission not to meet an MCL or a treatment technique under certain conditions.

- A report that contains data on a contaminant for which EPA has set a treatment technique or an action level must include one or both of the following definitions as applicable:
    1. Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.
    2. Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

- Information on Detected Contaminants. This subsection specifies the requirements for information to be included in each report for contaminants subject to mandatory monitoring (except Cryptosporidium). It applies to:
    1. Contaminants subject to an MCL, action level, or treatment technique (regulated contaminants)
    2. Contaminants for which monitoring is required by 40 CFR 141.40 (unregulated contaminants); and
    3. Disinfection by-products or microbial contaminants for which monitoring is required by 40 CFR 141.142 and 141.143, except as provided under paragraph (e)(1) of this section, and which are detected in the finished water.

The data relating to these contaminants must be displayed in one table or in several adjacent tables. Any additional monitoring results that a community water system chooses to include in its report must be displayed separately.

The data must be derived from data collected to comply with EPA and state monitoring and analytical requirements during calendar year 1998 for the first report and subsequent calendar years thereafter except that:

1. Where a system is allowed to monitor for regulated contaminants less often than once a year, the table(s) must include the date and results of the most recent sampling and the report must include a brief statement indicating that the data presented in the report are from the most recent testing done in accordance with the regulations. No data older than 5 years need be included.
2. Results of monitoring in compliance with 40 CFR 141.142 and 141.143 need only be included for 5 years from the date of last sample or until any of the detected contaminants becomes regulated and subject to routine monitoring requirements, whichever comes first.

For detected regulated contaminants (listed in Appendix A to this subpart), the table(s) must contain:

1. The MCL for that contaminant expressed as a number equal to or greater than 1.0 (as provided in Appendix A to this subpart);
2. The MCLG for that contaminant expressed in the same units as the MCL;
3. If there is no MCL for a detected contaminant, the table must indicate that there is a treatment technique, or specify the action level, applicable to that contaminant, and the report must include the definitions for treatment technique and/or action level, as appropriate, specified in paragraph(c)(3) of this section;
4. For contaminants subject to an MCL, except turbidity and total coliforms, the highest contaminant level used to determine compliance with an NPDWR and the range of detected levels, as follows:
   a. When compliance with the MCL is determined annually or less frequently: The highest detected level at any sampling point and the range of detected levels expressed in the same units as the MCL.
   b. When compliance with the MCL is determined by calculating a running annual average of all samples taken at a sampling point: the highest average of any of the sampling points and the range of all sampling points expressed in the same units as the MCL.
   c. When compliance with the MCL is determined on a system-wide basis by calculating a running annual average of all samples at all sampling points: the average and range of detection expressed in the same units as the MCL.
5. For turbidity.
   a. When it is reported pursuant to 40 CFR 141.13: The highest average monthly value.
   b. When it is reported pursuant to the requirements of 40 CFR 141.71: the highest monthly value. The report should include an explanation of the reasons for measuring turbidity.
   c. When it is reported pursuant to 40 CFR 141.73 or 141.173: The highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in 40 CFR 141.73 or 151.173 for the filtration technology being used. The report should include an explanation of the reasons for measuring turbidity;
6. For lead and copper: the 90th percentile value of the most recent round of sampling and the number of sampling sites exceeding the action level;
7. For total coliform:
   a. The highest monthly number of positive samples for systems collecting fewer than 40 samples per month; or

b. The highest monthly percentage of positive samples for systems collecting at least 40 samples per month;

8. For fecal coliform: The total number of positive samples; and
9. The likely source(s) of detected contaminants to the best of the operator's knowledge. Specific information regarding contaminants may be available in sanitary surveys and source water assessments, and should be used when available to the operator. If the operator lacks specific information on the likely source, the report must include one or more of the typical sources for that contaminant listed in Appendix B to this subpart which are most applicable to the system.

If a community water system distributes water to its customers from multiple hydraulically independent distribution systems that are fed by different raw water sources, the table should contain a separate column for each service area, and the report should identify each separate distribution system. Alternatively, systems could produce separate reports tailored to include data for each service area.

The table(s) must clearly identify any data indicating violations of MCLs or treatment techniques and the report must contain a clear and readily understandable explanation of the violation including: the length of the violation, the potential adverse health effects, and actions taken by the system to address the violation. To describe the potential health effects, the system must use the relevant language of appendix C to this subpart.

For detected unregulated contaminants for which monitoring is required (except Cryptosporidium), the table(s) must contain the average and range at which the contaminant was detected. The report may include a brief explanation of the reasons for monitoring for unregulated contaminants.

- Information on Cryptosporidium, radon, and other contaminants:

If the system has performed any monitoring for Cryptosporidium, including monitoring performed to satisfy the requirements of 40 CFR 141.143, which indicates that Cryptosporidium may be present in the source water or the finished water, the report must include:

1. A summary of the results of the monitoring; and
2. An explanation of the significance of the results.

If the system has performed any monitoring for radon that indicates that radon may be present in the finished water, the report must include:

1. The results of the monitoring; and
2. An explanation of the significance of the results.

If the system has performed additional monitoring that indicates the presence of other contaminants in the finished water, EPA strongly encourages systems to report any results that may indicate a health concern. To determine if results may indicate a health concern, EPA recommends that systems find out if EPA has proposed an NPDWR or issued a health advisory for that contaminant by calling the Safe Drinking Water Hotline (800-426-4791). USEPA considers detects above a proposed MCL or health advisory level to indicate possible health concerns. For such contaminants, EPA recommends that the report include:

1. The results of the monitoring; and
2. An explanation of the significance of the results noting the existence of a health advisory or a proposed regulation.

- Compliance with NPDWR. In addition to the requirements of 40 CFR 141.153(d)(7), the report must note any violation that occurred during the year covered by the report of a requirement

listed below, and include a clear and readily understandable explanation of the violation, any potential adverse health effects, and the steps the system has taken to correct the violation.

Monitoring and reporting of compliance data;

Filtration and disinfection prescribed by subpart H of this part. For systems that have failed to install adequate filtration or disinfection equipment or processes, or have had a failure of such equipment or processes which constitutes a violation, the report must include the following language as part of the explanation of potential adverse health effects: Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Lead and copper control requirements prescribed by subpart I of this part. For systems that fail to take one or more actions prescribed by 40 CFR 141.80(d), 141.81, 141.82, 141.83, or 141.84, the report must include the applicable language of Appendix C to this subpart for lead, copper, or both.

Treatment techniques for Acrylamide and Epichlorohydrin prescribed by subpart K of this part. For systems that violate the requirements of subpart K of this part, the report must include the relevant language from Appendix C to this subpart.

Recordkeeping of compliance data.

Special monitoring requirements prescribed by 40 CFR 141.40 and 141.41; and

Violation of the terms of a variance, an exemption, or an administrative or judicial order.

- Variances and Exemptions. If a system is operating under the terms of a variance or an exemption issued under Sec. 1415 or 1416 of SDWA, the report must contain:

  An explanation of the reasons for the variance or exemption;

  The date on which the variance or exemption was issued;

  A brief status report on the steps the system is taking to install treatment, find alternative sources of water, or otherwise comply with the terms and schedules of the variance or exemption; and

  A notice of any opportunity for public input in the review, or renewal, of the variance or exemption.

- Additional information:

  The report must contain a brief explanation regarding contaminants that may reasonably be expected to be found in drinking water including bottled water.

  1. The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.
  2. Contaminants that may be present in source water include:
     a. Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

b. Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
c. Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
d. Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
e. Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

3. To ensure that tap water is safe to drink, EPA prescribes regulations to limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.
4. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (800-426-4791).

The report must include the telephone number of the owner, operator, or designee of the community water system as a source of additional information concerning the report.

In communities with a large proportion of non-English speaking residents, as determined by the Primacy Agency, the report must contain information in the appropriate language(s) regarding the importance of the report or contain a telephone number or address where such residents may contact the system to obtain a translated copy of the report or assistance in the appropriate language.

The report must include information (e.g., time and place of regularly scheduled board meetings) about opportunities for public participation in decisions that may affect the quality of the water.

The systems may include such additional information as they deem necessary for public education consistent with, and not detracting from, the purpose of the report.

- Required additional health information.

All reports must prominently display the following language: Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

A system that detects arsenic at levels above 25 µg/l, but below the MCL:

1. Must include in its report a short informational statement about arsenic, using language such as: EPA is reviewing the drinking water standard for arsenic because of special concerns that it may not be stringent enough. Arsenic is a naturally-occurring mineral known to cause cancer in humans at high concentrations.
2. May write its own educational statement, but only in consultation with the Primacy Agency.

A system that detects nitrate at levels above 5 mg/L, but below the MCL:

1. Must include a short informational statement about the impacts of nitrate on children using language such as: Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than 6 mo of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask advice from your health care provider.
2. May write its own educational statement, but only in consultation with the Primacy Agency.

Systems that detect lead above the action level in more than 5%, but fewer that 10%, of homes sampled:

1. Must include a short informational statement about the special impact of lead on children using language such as: Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800-426-4791).
2. May write its own educational statement, but only in consultation with the Primacy Agency.

Appendix 2-7

Monitoring and Sampling Parameters for Lead and Copper in Drinking Water (40 CFR 141.86(c) and 141.86(d))

(NOTE: These parameters apply to Community and NTNC water systems.)

Number of Sampling Sites Required

System Size (people served)	No. of sites (standard monitoring)	No. of sites (reduced monitoring)
> 100,000	100	50
10,001 - 100,000	60	30
3301 - 10,000	40	20
501 - 3300	20	10
101 - 500	10	5
</= 100	5	5

Dates for the Start of Monitoring

System Size (people served)	First 6-mo monitoring period begins on:
> 50,000	1 Jan 1992
3301 - 50,000	1 July 1992
</=3300	1 July 1993

Appendix 2-8

Monitoring Requirements for Water Quality Parameters (40 CFR 141.87)

(NOTE: These requirements apply to Community and NTNC water systems.)

(NOTE: This table is for illustrative purposes, consult the text of the regulation for actual details.)

Monitoring Period	**Parameters**[1]	Location	Frequency
Initial Monitoring	pH, alkalinity, orthophosphate or silica[2], calcium, conductivity, temperature.	Taps and at entry points in distribution system.	Every 6 mo
After Installation of Corrosion Control	pH, alkalinity, orthophosphate or silica, calcium[3].	Taps	Every 6 mo
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual[4].	Entry points to distribution system.	Biweekly
After State Specifies Parameter Values for Optimal Corrosion Control	pH, alkalinity, orthophosphate or silica[2], calcium[3].	Taps	Every 6 mo
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual[4].	Entry points to distribution system.	Biweekly
Reduced Monitoring	pH, alkalinity, orthophosphate or silica[2], calcium[3].	Taps	Every 6 mo at a reduced number of sites.
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual[4].	Entry points to distribution system.	Biweekly

1. Small and medium-size systems have to monitor for water quality parameters only during monitoring periods in which the system exceeds the lead or copper action level.
2. Orthophosphates must be measured only when an inhibitor containing a phosphate component is used. Silica must be measured only when an inhibitor containing silicate compounds is used.

3. Calcium must be measured only when calcium carbonate stabilization is used as a part of corrosion control.
4. Inhibitor dosage rates and inhibitor residual concentrations (orthophosphates or silica) must be measured only when an inhibitor is used.

Appendix 2-9

MCL and MRDL Requirements Related to Disinfection (40 CFR 141.64 and 141.65) [Added January 1999]

- The MCLs for disinfection byproducts are as follows:

Disinfection byproduct	MCL (mg/L)
Total trihalomethanes (TTHM)	0.080
Haloacetic acids (five) (HAA5)	0.060
Bromate	0.010
Chlorite	1.0

- Maximum residual disinfectant levels (MRDLs) are as follows:

Disinfectant residual	MRDL (mg/L)
Chlorine	4.0 (as Cl_2).
Chloramines	4.0 (as Cl_2).
Chlorine dioxide	0.8 (as ClO_2).

Appendix 2-10

Monitoring Frequency for TTHM and HAA5
(40 CFR 141.132(b))
[Added January 1999]

Table 1: Routine Monitoring Frequency for TTHM and HAA5

Type of system	Minimum monitoring frequency	Sample location in the distribution system
Subpart H system serving at least 10,000 persons.	Four water samples per quarter per treatment plant.	At least 25% of all samples collected each quarter at locations representing maximum residence time. Remaining samples taken at locations representative of at least average residence time in the distribution system and representing the entire distribution system, taking into account number of persons served, different sources of water, and different treatment methods.[1]
Subpart H system serving from 500 to 9,999 persons.	One water sample per quarter per treatment plant.	Locations representing maximum residence time.[1]
Subpart H system serving < 500 persons.	One sample per year per treatment plant during month of warmest water temperature.	Locations representing maximum residence time.[1] If the sample (or average of annual samples, if more than one sample is taken) exceeds MCL, system must increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until system meets reduced monitoring criteria (see Table 2)
System using only groundwater not under direct influence of surface water using chemical disinfectant and serving at least 10,000 persons.	One water sample per quarter per treatment plant [2].	Locations representing maximum residence time.[1]
System using only groundwater not under direct influence of surface water using chemical disinfectant and serving < 10,000 persons.	One sample per year per treatment plant [2] during month of warmest water temperature.	Locations representing maximum residence time.[1] If the sample (or average of annual samples, if more than one sample is taken) exceeds MCL, system must increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until system meets

criteria for reduced monitoring (See Table 2)

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[1] If a system elects to sample more frequently than the minimum required, at least 25% of all samples collected each quarter (including those taken in excess of the required frequency) must be taken at locations that represent the maximum residence time of the water in the distribution system. The remaining samples must be taken at locations representative of at least average residence time in the distribution system.

[2] Multiple wells drawing water from a single aquifer may be considered one treatment plant for determining the minimum number of samples required, with state approval in accordance with criteria developed under 40 CFR 142.16(f)(5) of this chapter.

Table 2: Reduced Monitoring Frequency for TTHM and HAA5

If you are a . . .	You may reduce monitoring if you have monitored at least one year and your . .	To this level
Subpart H system serving at least 10,000 persons which has a a source water annual average TOC level before any treatment, </= 4.0 mg/L.	TTHM annual average </= 0.040 mg/L and HAA5 annual average </= 0.30 mg/L.	One sample per treatment plant per quarter at distribution system location reflecting maximum residence time.
Subpart H system serving from 500 to 9999 persons which has a source water annual average TOC level, before any treatment, </= 4.0 mg/L.	TTHM annual average </= 0.040 mg/L and HAA5 annual average </= 0.030 mg/L.	One sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature. NOTE: Any Subpart H system serving fewer than 500 persons may not reduce its monitoring to < one sample per treatment plant per year.
System using only groundwater not under direct influence of surface water using chemical disinfectant and serving at least 10,000 persons.	TTHM annual average </= 0.040 mg/L and HAA5 annual average <l/= 0.030 mg/L.	One sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature
System using only groundwater not under direct influence of surface water using chemical disinfectant and serving fewer than 10,000 persons.	TTHM annual average </= 0.040 mg/L and HAA5 annual average </= 0.030 mg/L for two consecutive years OR TTHM annual average </= 0.020 mg/L and HAA5 annual average </= 0.015 mg/L for 1 yr.	One sample per treatment plant per 3 yr monitoring cycle at distribution system location reflecting maximum residence time during month of warmest water temperature with the 3-yr cycle beginning on 1 January following quarter in which system qualifies for reduced monitoring.

Appendix 2-11

Reporting Requirements
(40 CFR 141.134(b))
[Added January 1999]

- Disinfection Byproducts, systems must report the information specified in the following table:

If you are a...	You must report...[1]
System monitoring for TTHM and HAA5 under the requirements of 40 CFR 141.132(b) on a quarterly or more frequent basis.	(1) The number of samples taken during the last quarter. (2) The location, date, and result of each sample taken during the last quarter. (3) The arithmetic average of all samples taken in the last quarter. (4) The annual arithmetic average of the quarterly arithmetic averages of this section for the last four quarters. (5) Whether the MCL exceeded.
System monitoring for TTHMs and HAA5 under the requirements of 40 CFR 141.132(b) less frequently than quarterly (but at least annually).	(1) The number of samples taken during the last year (2) The location, date, and result of each sample taken during the last quarter. (3) The arithmetic average of all samples taken over the last year. (4) Whether the MCL was exceeded.
System monitoring for TTHMs and HAA5 under the requirements of 40 CFR 141.132(b) less frequently than annually.	(1) The location, date, and result of the last sample taken. (2) Whether the MCL was exceeded.
System monitoring for chlorite under the requirements of 40 CFR 141.132(b).	(1) The number of samples taken each month for the last 3 mo. (2) The location, date, and result of each sample taken during the last quarter. (3) For each month in the reporting period, the arithmetic average of all samples taken in the month. (4) Whether the MCL was exceeded, and in which month it was exceeded.
System monitoring for bromate under the requirements of 40 CFR 141.132(b)..	(1) The number of samples taken during the last quarter (2) The location, date, and result of each sample taken during the last quarter. (3) The arithmetic average of the monthly arithmetic averages of all samples in the last year. (4) Whether the MCL was exceeded.

- Disinfectants, systems must report the information specified in the following table:

If you are a...	You must report...[1]
System monitoring for chlorine or chloramines under the requirements of 40 CFR 141.132(c).	(1) The number of samples taken during each month of the last quarter. (2) The monthly arithmetic average of all samples taken in each month for the last 12 mo. (3) The arithmetic average of all monthly averages for the last 12 mo. (4) Whether the MRDL was exceeded.
System monitoring for chlorine dioxide under the requirements of 40 CFR 141.132(c).	(1) The dates, results, and locations of samples taken during the last quarter. (2) Whether the MRDL was exceeded. (3) Whether the MRDL was exceeded in any two consecutive daily samples and whether the resulting violation was acute/nonacute.

[1] The State may choose to perform calculations and determine whether the MRDL was exceeded, in lieu of having the system report that information.

- Disinfection Byproduct Precursors and Enhanced Coagulation or Enhanced Softening, systems must report the information specified in the following table:

If you are a . . .	You must report . . .[1]
System monitoring monthly or quarterly for TOC under the requirements of 40 CFR 141.132(d) and required to meet the enhanced coagulation or enhanced softening requirements in 40 CFR 141.135(b)(2) or (3).	(1) The number of paired (source water and treated water, prior to continuous disinfection) samples taken during the last quarter. (2) The location, date, and result of each paired sample and associated alkalinity taken during the last quarter. (3) For each month in the reporting period that paired samples were taken, the arithmetic average of the percent reduction of TOC for each paired sample and the required TOC percent removal. (4) Calculations for determining compliance with the TOC percent removal requirements, as provided in 40 CFR 141.135(c)(1). (5) Whether the system is in compliance with the enhanced coagulation or enhanced softening percent removal requirements in 40 CFR 141.135(b) for the last four quarters.

System monitoring monthly or quarterly for TOC under the requirements of 40 CFR 141.132(d) and meeting one or more of the alternative compliance criteria in 40 CFR 141.135(a)(2) or (3).	(1) The alternative compliance criterion that the system is using. (2) The number of paired samples taken during the last quarter. (3) The location, date, and result of each paired sample and associated alkalinity taken during the last quarter. (4) The running annual arithmetic average based on monthly averages (or quarterly samples) of source water TOC for systems meeting a criterion in 40 CFR 141.135(a)(2)(i) or (iii) or of treated water TOC for systems meeting the criterion in 40 CFR 141.135(a)(2)(ii). (5) The running annual arithmetic average based on monthly averages (or samples) of source water SUVA for systems meeting criterion in 40 CFR 141.135(a)(2)(v) or of treated water SUVA for systems meeting the criterion in 40 CFR 141.135(a)(2)(vi). (6) The running annual average of source water alkalinity for systems meeting the criterion in 40 CFR 141.135(a)(2)(iii) and of treated water alkalinity for systems meeting the criterion in 40 CFR 141.135(a)(3)(i). (7) The running annual average for both TTHM and HAA5 for systems meeting the criterion in 40 CFR 141.135(a)(2)(iii) or (iv). (8) The running annual average of the amount of magnesium hardness removal (as $CaCO_3$, in mg/L) for systems meeting the criterion in 40 CFR 141.135(a)(3)(ii). (9) Whether the system is compliance with the particular alternative criterion in 40 CFR 141.135(a)(2) or (3).

[1] The State may choose to perform calculations and determine whether the treatment technique was met, in lieu of having the system report that information.

SECTION 3

HAZARDOUS MATERIALS MANAGEMENT

U.S. ECAH, September 1999

A. Applicability

This section primarily addresses the proper storage and handling of chemicals and the spill contingency and response requirements related to hazardous materials. Oil, pesticides, and asbestos are hazardous materials which require special management practices at FWS facilities, and are addressed in separate sections. Radioactive substances and the general category of hazardous wastes are also not included in this section. This section does not focus on individual hazardous chemicals or substances used, but deals with the generic requirements and management practices (MPs) associated with minimizing impacts on the environment due to spills or releases of hazardous materials because of improper storage and handling.

All underground storage tank (UST) regulations that apply to hazardous materials have been consolidated into Section 9, Underground Storage Tank (UST) Management.

B. Federal Legislation

- *The Occupational Safety and Health Act* (OSHA) of 1970. This act, last amended in November 1990, 29 U.S. Code (USC) 651-678, is a Federal statute which governs the issues related to occupational safety and health. The purpose and policy of this act is to assure every working man and woman in the nation safe and healthful working condition and to preserve our human resources by, among other things, providing for the development and publication of occupational safety and health standards, providing for an effective enforcement program, and providing for appropriate reporting procedures with respect to occupational safety and health which procedures will help achieve the objectives of this Act and accurately describe the nature of the occupational safety and health (29 USC 651(b)(9)(10)(12)).

- *The Hazardous Materials Transportation Act* of 1975. This act, as last amended in November 1990, 49 USC 1801-1819, et al., is the Federal legislation which governs the transportation of hazardous materials in the nation. The policy of Congress is to improve the regulatory and enforcement authority of the Secretary of Transportation to protect the Nation adequately against the risks to life and property which are inherent in the transportation of hazardous materials in commerce (49 USC 1801).

- *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) of 1980. This act was amended by the *Superfund Amendments and Reauthorization Act* (SARA) of 1986, 42 USC 9601-11050, 10 USC 2701-2810 et al. CERCLA/SARA regulates the prevention, control, and compensation relating to environmental pollution.

- *The Emergency Planning and Community Right-to-Know Act* (EPCRA) of 1986. This act was designed to promote emergency planning and preparedness at both the state and local level. It provides citizens and local governments with information regarding the potential hazards in their community. EPCRA requires the use of emergency planning and designates state and local governments as recipients for information regarding chemicals and toxins used in the community.

- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*. This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal,

state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the Agency funds meet applicable Federal, state, and local environmental requirements and for correcting situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

- EO 12856, *Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements.* This EO requires the heads of Federal agencies to develop a written pollution prevention strategy for their agencies. Military departments are covered under the auspices of the Department of Defense (DOD). The head of each agency shall ensure that each of its covered facilities develops a written pollution prevention plan no later than the end of 1995. Federal agencies are required to conduct audits of their facilities as necessary to ensure development of these plans and of the facilities pollution prevention program. Each Federal agency will also develop voluntary goals to reduce the agency's total releases of toxic chemicals to the environment, and offsite transfers of such chemicals for treatment and disposal are publicly reported.

- EO13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition.* This EO, dated 14 September 1998, mandates the head of each executive agency incorporate waste prevention and recycling in the agency's daily operations and work to increase and expand markets for recovered materials through greater Federal Government preference and demand for such products. Under this EO, it is the national policy to prefer pollution prevention, whenever feasible. Pollution that cannot be prevented should be recycled; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner. Disposal should be employed only as a last resort. This EO also stipulates that agencies will comply with executive branch policies for the acquisition and use of environmentally preferable products and services and implement cost-effective procurement preference programs favoring the purchase of these products and services. Finally, the EO creates a Steering Committee, a Federal Environmental Executive (FEE), and a Task Force, and establishes Agency Environmental Executive (AEE) positions within each agency, to be responsible for ensuring the implementation of this order. The FEE, AEEs, and members of the Steering Committee and Task Force are to be full-time Federal Government employees. This EO revokes EO 12873 **[Added October 1998].**

- The National Fire Code, *Flammable and Combustible Liquids Code,* National Fire Protection Association (NFPA) 30, prohibits the storage of Class I and Class II liquids in plastic containers in general-purpose warehousing.

- Federal regulations used to develop the checklist include:

    - EO 12088, *Federal Compliance with Pollution Control Standards.*
    - EO 12856, *Federal Compliance with Right-To-Know Laws and Pollution Prevention Requirements.*
    - 29 CFR 1910, *Occupational Safety and Health Standards.*
    - 40 CFR 300, *National Oil and Hazardous Substances Pollution Contingency Plan.*
    - 40 CFR 302, *Reportable Quantities of Hazardous Materials* (Table 302.4).
    - 40 CFR 355, *Emergency Planning and Notification.*
    - 40 CFR 370, *Hazardous Chemical Reporting: Community Right-To-Know.*
    - 40 CFR 372, *Toxic Chemical Release Reporting and Community Right-To-Know.*
    - 49 CFR 171, *General Information, Regulations, and Definitions.*
    - 49 CFR 172, *Hazardous Materials Tables, Hazardous Materials Communications Requirements and Emergency Response Information Requirements.*
    - 49 CFR 173, *Shippers, General Requirements for shipments and Packaging.*
    - 49 CFR 178, *Specifications by Packaging.*
    - 49 CFR 179, *Specifications for Tank Cars.*

- NFPA, *Fire Protection Guide of Hazardous Materials*.

C. State/Local Regulations

Hazardous materials may be regulated on the state level as well as local agencies (county/ city fire departments) who may require flammable/combustible materials to meet certain storage requirements. Usually, these local ordinances will follow the NFPA *Fire Protection Guide on Hazardous Materials* (Pamphlets 325A, 325M, 491, 491F, and 704M).

D. FWS/DOI Manuals

- 560 FW 2, *Pollution Prevention*. This chapter, dated 24 June 1994, encourages the use of pollution prevention to conserve natural resources.

E. Key Compliance Requirements

- Planning and Documentation - Facilities should maintain a master listing of hazardous materials storage sites. When the facility needs outside fire protection help, it should tell the local fire department the types of hazardous chemicals it uses, the areas where it uses them, what it uses them for, and the amount it uses. Facilities are required to have Material Safety Data Sheet (MSDS) files for each hazardous chemical it stores and uses, not including such items as hazardous waste, tobacco, or drugs and cosmetics meant for personal use (29 CFR 1910.1200(b) and 1910.1200(g)).

- Personnel Training - Facilities are required to provide all employees with written information about hazardous chemicals to which they are exposed. Personnel who work with hazardous materials are required to be trained in the use of and potential hazards of such materials. All employees and supervisors working on sites exposed to hazardous materials or other hazards are required to be trained before engaging in these activities (29 CFR 1910.1200).

- Pollution Prevention - FWS facilities are required to prepare Pollution Prevention Plans by 31 December 1995. Additionally, it is Service policy that facilities will conduct their activities in a manner to prevent pollution through the use of waste source reduction and waste recycling.

- Hazardous Substance Release Reporting - FWS facilities are required to notify the National Response Center (NRC) immediately if it releases hazardous substances in excess of or equal to reportable quantities (RQs) (see Appendix 3-1). Facilities with continuous and stable releases have limited notification requirements. If a facility produces, uses, or stores extremely hazardous chemicals, and has a reportable release of these substances, it is required to notify the community emergency coordinator or local planning committee or Governor if there is no planning committee (40 CFR 302.1 through 302.6, 302.8, and 355.40).

- Emergency Planning - A facility with extremely hazardous substances in amounts equal to or greater than the limits found in Appendix 3-1 is required to notify the emergency response commission and designate a representative to participate in local emergency planning (40 CFR 355.10 through 355.40 and 355 Appendix A).

- Right-to-Know Requirements - Facilities required by OSHA to have an MSDS for a hazardous chemical are required to submit the MSDSs to the emergency commission and fire department with jurisdiction over the facility. New MSDSs will be submitted within 3 mo after discovery of significant new information (40 CFR 370.20 through 370.28).

- Hazardous Materials Storage - Containers for hazardous chemicals are required to be labeled or tagged with the identity of the substance and appropriate warning markings. Areas where hazardous materials are stored or used around the facility are required to be kept free from accumulations of materials that create a hazard, such as leaking containers, or a placement of containers in a manner that would create hazards such as tripping, fire, or pests. Substances that together may create a fire hazard must be separated (29 CFR 1910.176(c), 1910.1200(b), and 1200(f)).

- Hazardous Materials in Laboratories - Facilities that use hazardous chemicals in laboratories are required to have a Chemical Hygiene Plan which is reviewed annually. Such facilities are also required to provide employees with information and training about the hazardous chemicals in their work areas. Records about the exposure of employees are to be kept along with medical records (29 CFR 1910.1450(e), 1910.1450(f), 1910.1450(h), and 1910.1450(j)).

- Storage of Flammable/Combustibles - In general, containers of flammable combustible liquids are to be stored and handled so as to not damage the container or label, block exits, or create a fire hazard (29 CFR 1910.106(d)).

- Flammable Combustible Storage Cabinets - Storage cabinets are to be fire resistant and labeled FLAMMABLE - KEEP FIRE AWAY. No more than 60 gal of Class I or Class II liquids and no more than 120 gal of Class III liquids can be stored in a cabinet (29 CFR 1910.106(d)(3)).

- Flammable Combustible Storage Rooms - Storage rooms inside a building are to be fire resistant and have a raised sill or ramp to prevent the flow of spilled material from exiting the room. Ventilation and clear aisles must be provided and dispensing must be done by an approved pump or self-closing faucet (29 CFR 1910.106(d)(4)).

- Flammable/Combustible Warehouses or Storage Buildings - These structures will have 3-ft wide aisles for access to doors, windows, or standpipe connections. Materials will be stacked using pallets or dunnage when needed for stabilization and fire protection must be provided (29 CFR 1910.106(d)(5)(iv)).

- Outside Storage of Flammable Combustible Liquids - Containers of flammable/combustible liquids can be stored outside if no more than 1100 gal of liquid are stored adjacent to a building. More than 1100 gal can be stored if there are 10 ft or more between buildings and the nearest flammable container. The storage area must be graded to divert spills or surrounded by a curb (29 CFR 1910.106(d)(6)).

- Storage of Flammable/Combustibles in Industrial Areas - Specific guidelines, requirements, or operating standards apply wherever flammable/combustible materials are stored, dispensed, or used in industrial plants, are in incidental storage, or in use in unit operations. This includes availability of portable fire extinguishers, precautions being taken to prevent ignition, and use of maintenance and operating practices to control leakage and prevent accidental escape of flammable/combustible liquids (29 CFR 1910.106(e)(2) through 1910.106(e)(9)).

- Flammable Combustible Liquid Storage Tanks - Storage tanks are to be built of steel except in certain circumstances. Outside aboveground tanks for flammable liquids are to meet requirements for distance between tanks, firefighting access, and containment. When flammable vapor may be present from storage tanks, heat sources will be kept from the tanks. Tanks are required to have been strength-tested before being used (29 CFR 1910.106(b)).

- Compressed Gases - Regardless of where the cylinders are stored, NO SMOKING signs should be posted and actions taken to prevent fire. Compressed gases are required to be stored according to the Compressed Gas Association Pamphlet P-1-1965 (29 CFR 1910.101).

- Acid Storage - Bulk storage of acids should be done in buildings that are one story in height with ventilation. Safety equipment must be available along with fire protection. The building is to be labeled NO SMOKING and heated to prevent freezing (MP).

- Hazardous Materials Transportation - The regulations in Title 49, Subchapter C of the CFR, detail requirements for the transportation of hazardous materials. 49 CFR 171.1(c) stipulates that these requirements apply when materials are being transported in commerce. According to a representative from the Department of Transportation (DOT), commerce is defined in terms of making a profit in this instance, therefore, Subchapter C does not apply to Federal agencies.

- Recordkeeping - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

F. Key Compliance Definitions

- *Aerosol* - a material that is dispensed from its container as a mist, spray, or foam by a propellant under pressure (29 CFR 1910.106(a)(1)).

- *Approved* - listed or approved by Underwriters Laboratories, Inc., Factory Mutual Engineering Corporation, The Bureau of Mines, National Institute of Occupational Safety and Health (NIOSH), The American National Standards Institute (ANSI), NFPA, or other nationally recognized agencies which list, approve, test or develop specifications for equipment to meet fire protection, health, or safety requirements (29 CFR 1910.106(a)(35)).

- *Atmospheric Tank* - a storage tank which has been designed to operate at pressures from atmospheric through 0.5 psig (29 CFR 1910.106(a)(2)).

- *Barrel* - a volume of 42 U.S. gallons (29 CFR 1910.106(a)(33)).

- *Basement* - a story of a building or structure having one-half or more of its height below ground level and to which access for fire fighting purposes is unduly restricted (29 CFR 1910.106(a)(4)).

- *Blanket Insulation* - relatively flat and flexible insulation in coherent sheet form, furnished in units of substantial area. Batt insulation is included in this term (40 CFR 247.3) **[Added July 1999]**.

- *Board Insulation* - Semi-rigid insulation preformed into rectangular units having a degree of suppleness, particularly related to their geometrical dimensions (40 CFR 247.3) **[Added July 1999]**.

- *Boiling Point* - the temperature at which a liquid starts to boil when at atmospheric pressure (14.7 psia), as determined by ASTM test D-86-72 (29 CFR 1910.106(a)(5)).

- *Building Insulation* - a material, primarily designed to resist heat flow, which is installed between the conditioned volume of a building and adjacent unconditioned volumes or the outside. This term includes but is not limited to insulation products such as blanket, board, spray-in-place, and loose-fill that are used as ceiling, floor, foundation, and wall insulation (40 CFR 247.3) **[Added July 1999]**.

- *Bulk Plant* - that portion of the property where flammable or combustible liquids are received by tank vessel, pipelines, tank car, or tank vehicle, and are stored or blended in bulk for the purpose of distributing such liquids by tank vessel pipeline, car, tank vehicle, or container (29 CFR 1910.106(a)(7)).

- *Cellulose Fiber Loose-Fill* - a basic material of recycled wood-based cellulosic fiber made from selected paper, paperboard stock, or ground wood stock, excluding contaminated materials which may reasonably be expected to be retained in the finished product, with suitable chemicals introduced to provide properties such as flame resistance, processing and handling characteristics. The basic cellulosic material may be processed into a form suitable for installation by pneumatic or pouring methods (40 CFR 247.3) **[Added July 1999]**.

- *Channelizers* - highly visible barrels or drums that can be positioned to direct traffic through detours (40 CFR 247.3) **[Added July 1999]**.

- *Class A Explosives* - possessing, detonating, or otherwise maximum hazard; such as dynamite, nitroglycerin, picric acid, lead azide, fulminate of mercury, black powder, blasting caps, and detonating primers (29 CFR 1910.109(a)) **[Added July 1999]**.

- *Class B Explosives* - possessing flammable hazard, such as propellant explosives (including some smokeless propellant), photographic flash powders, and some special fireworks (29 CFR 1910.109(a)) **[Added July 1999]**.

- *Class C Explosives* – includes certain types of manufactured articles which contain Class A or Class B explosives, or both, as components but in restricted quantities (29 CFR 1910.109(a)) **[Added August 1999]**.

- *Closed Container* - a container so sealed with a lid or other closing device that neither liquid and/or vapor will escape from it at ordinary temperatures (29 CFR 1910.106(a)(9)).

- *Combustible Liquid* - a liquid having a flashpoint at or above 100 °F (37.8 °C). Combustible liquids are categorized as Class II or Class III liquids and are further subdivided as follows (29 CFR 1910.106(a)(18)):
    1. Class II liquids are those having a flashpoint at or above 100 °F (37.8 °C), and below 140 °F (60 °C) except any mixture having components with flashpoints of 200 °F (93.3 °C) or higher, the volume of which makes up 99 percent or more of the total volume of the mixture.
    2. Class III A liquids are those having flashpoints at or above 140 °F (60 °C), and below 200 °F (93.3 °C) except any mixture having components with flashpoints of 200 °F (93.3 °C) or higher, the total volume of which make up 99 percent of more of the total volume of the mixture.
    3. Class III B liquids are those having flashpoints at or above 200 °F (93.3 °C).

- *Commission* - the emergency response commission for the State in which the facility is located except where the facility is located in Indian Country, in which case, commission means the emergency response commission for the tribe under whose jurisdiction the facility is located. In absence of an emergency response commission, the Governor and the chief executive officer, respectively, shall be the commission. Where there is a cooperative agreement between a State and a Tribe, the commission shall be the entity identified in the agreement (40 CFR 355.20 and 370.2) **[Added April 1999]**.

- *Committee or Local Emergency Planning Committee* - the local emergency planning committee appointed by the emergency response commission (40 CFR 355.20 and 370.2) **[Added April 1999]**.

- *Continuous* - continuous release is a release that occurs without interruption or abatement or that is routine, anticipated, and intermittent and incidental to normal operations or treatment processes (40 CFR 302.8(b)) **[Added April 1999]**.

- *Delineator* - a highly visible pavement marker that can be positioned to direct traffic or define boundaries (40 CFR 247.3) **[Added July 1999]**.

- *Engine Lubricating Oils* - petroleum-based oils used for reducing friction in engine parts (40 CFR 247.3) **[Added July 1999]**.

- *Explosive-Actuated Power Devices* – any tool or special mechanized device which is actuated by explosives, but not including propellant-actuated power devices. (Examples are jet trappers and jet perforators) (29 CFR 1910.109(a)) [Added August 1999].

- *Explosive* – any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion, i.e., with substantially instantaneous release of gas and heat, unless such compound, mixture, or device is otherwise specifically classified by the U.S. Department of Transportation; see 49 CFR Chapter I. The term explosive shall include all material which is classified as Class A, Class B, and Class C explosives by the U.S. Department of Transportation, and includes, but is not limited to, dynamite, black powder, pellet powders, initiating explosives, blasting caps, electric blasting caps, safety fuse, fuse lighters, fuse igniters, squibs, cordeau detonant fuse, instantaneous fuse, igniter cord, igniters, small arms ammunition, small arms ammunition primers, smokeless propellant, cartridges for propellant-actuated power devices, and cartridges for industrial guns. Commercial explosives are those explosives which are intended to be used in commercial or industrial operations (29 CFR 1910.109(a)) [Added August 1999].

- *Extremely Hazardous Substances* - all substances listed in Appendices A and B in 40 CFR 355 (see the column labeled in Appendix 3-1) (40 CFR 355.20).

- *Fire Area* - that portion of a building separated from the remainder by construction having a rated fire resistance of at least 1 h and having all communicating openings properly protected by an assembly having a fire resistance rating of at least 1 h (29 CFR 1910.106(a)(12)).

- *Flammable Aerosol* - an aerosol that is required to be labeled FLAMMABLE under the *Federal Hazardous Substance Labeling Act* (15 USC 1261). These aerosols are considered Class IA liquids (29 CFR 1910.106(a)(19)).

- *Flammable Liquid* - a liquid with a flashpoint below 100 °F (37.8 °C) except any mixture having components with flashpoints of 100 °F (37.8 °C) or higher, the total of which make up 99 percent or more of the total volume of the mixture. Flammable liquids are categorized as Class I liquids, and are further subdivided as follows (29 CFR 1910.106(a)(19)):
    1. Class IA are those that have a flashpoint below 73 °F (22.8 °C) and boiling point below 100 °F (37.8 °C)
    2. Class IB are those that have flashpoints below 73 °F (22.8 °C) and boiling points at or above 100 °F (37.8 °C)
    3. Class IC are those that have flashpoints at or above 73 °F (22.8 °C) and below 100 °F (37.8 °C).

- *Federal Agency* - any department, agency, or other instrumentality of the Federal government; any independent agency or establishment of the Federal government including any government corporation; and the Government Printing Office (40 CFR 247.3) **[Added July 1999]**.

- *Fiberglass Insulation* - insulation which is composed principally of glass fibers, with or without binders (40 CFR 247.3) **[Added July 1999]**.

- *Flashpoint* - the minimum temperature at which a liquid gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid. Flashpoints are established using several standard closed cup test methods (29 CFR 1910.106(a)(14)).

- *Flexible Delineator* - a highly visible marker that can be positioned to direct traffic or define boundaries and that will flex if struck by a vehicle to prevent damage to the vehicle or the delineator (40 CFR 247.3) **[Added July 1999]**.

- *Foam-in-place Insulation* - this is rigid cellular foam produced by catalyzed chemical reactions that hardens at the site of the work. The term includes spray-applied and injected applications such as spray-in-place foam and pour-in-place (40 CFR 247.3) **[Added July 1999]**.

- *Forbidden or Not Acceptable Explosives* – explosives which are forbidden or not acceptable for transportation by common carriers by rail freight, rail express, highway, or water in accordance with the regulations of the U.S. Department of Transportation, 49 CFR Chapter I (29 CFR 1910.109(a)) [Added August 1999].

- *Garden Hose* - a flexible tubing that conducts water to a specific location (40 CFR 247.3) **[Added July 1999]**.

- *Gear Oils* - petroleum-based oils used for lubricating machinery gears (40 CFR 247.3) **[Added July 1999]**.

- *Hazard Category* - any of the following (40 CFR 370.2) **[Added April 1999]**:
    1. immediate (acute) health hazard, including highly toxic, toxic, irritant, sensitizer, corrosive, (as defined under 29 CFR 1910.1200) and other hazardous chemicals that cause an adverse effect to a target organ and which effect usually occurs rapidly as a result of short term exposure and is of short duration
    2. delayed (chronic) health hazard, including carcinogens (as defined under 29 CFR 1910.1200) and other hazardous chemicals that cause an adverse effect to a target organ and which effect generally occurs as a result of long term exposure and is of long duration
    3. fire hazard, including flammable, combustible liquid, pyrophoric, and oxidizer (as defined under 29 CFR 1910.1200)
    4. sudden release of pressure, including explosive and compressed gas (as defined under 29 CFR 1910.1200)
    5. reactive, including unstable reactive, organic peroxide, and water reactive (as defined under 29 CFR 1910.1200).

- *Hazardous Chemical* - in relationship to laboratories, a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees (29 CFR 1910.1450(b)).

- *Hazardous Substance* - any substance designated pursuant to 40 CFR 302 (see the column titled Hazardous Substance Reportable Quantity (RQ) in Appendix 3-1) (40 CFR 302.3).

- *Hydraulic Fluids* - petroleum-based hydraulic fluids (40 CFR 247.3) **[Added July 1999]**.

- *Hydraulic Mulch* - a mulch that is a cellulose-based (paper or wood) protective covering that is mixed with water and applied through mechanical spraying in order to aid the germination of seeds and to prevent soil erosion (40 CFR 247.3) **[Added July 1999]**.

- *Hydroseeding* - the process of spraying seeds mixed with water through a mechanical sprayer (hydroseeder). Hydraulic mulch, fertilizer, a tacking agent, or a wetting agent can also be added to the water/seed mix for enhanced performance (40 CFR 247.3) **[Added July 1999]**.

- *Institutional Occupancy* - the occupancy or use of a building or structure or any portion thereof by persons harbored or detained to receive medical, charitable of other care or treatment or by persons involuntarily detained (29 CFR 1910.106(a)(16)).

- *Inventory Form* - the Tier I and Tier II emergency and hazardous chemical inventory forms set forth in subpart D of this part (40 CFR 370.2) **[Added April 1999]**.

- *Laboratory* - a facility where the laboratory use of hazardous chemicals occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a nonproduction basis (29 CFR 1910.1450(b)).

- *Laboratory Scale* - work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person (29 CFR 1910.1450(b)).

- *Laboratory Use of a Hazardous Chemical* - handling or use of such chemicals in which all of the following conditions are met (29 CFR 1910.1450(b)):
    1. chemical manipulations are carried out on a laboratory scale
    2. multiple chemical procedures or chemicals are used
    3. the procedures involved are not part of a production process, nor in any way simulate a production process
    4. protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals.

- *Laminated Paperboard* - board made from one or more plies of kraft paper bonded together, with or without facers, that is used for decorative, structural, or insulating purposes (40 CFR 247.3) **[Added July 1999]**.

- *Land Disturbance Incidental to Extraction* - this includes: land clearing; overburden removal and stockpiling; excavating, handling, transporting, and storing ores and other raw materials; and replacing materials in mined-out areas as long as such materials have not been beneficiated or processed and do not contain elevated radionuclide concentrations (greater than 7.6 picocuries per gram or pCi/g of Uranium-238, 6.8 pCi/g of Thorium-232, or 8.4 pCi/g of Radium-226) (40 CFR 355.40) **[Added April 1999]**.

- *Latex Paint* - a water-based decorative or protective covering having a latex binder (40 CFR 247.3) **[Added July 1999]**.

- *Lawn Edging* - a barrier used between lawns and landscaped areas or garden beds to prevent grass roots or weeds from spreading to the landscaped areas (40 CFR 247.3) **[Added July 1999]**.

- *Loose-fill Insulation* - insulation in granular, nodular, fibrous, powdery, or similar form, designed to be installed by pouring, blowing, or hand placement (40 CFR 247.3) **[Added July 1999]**.

- *Liquid* - any material with a fluidity greater than that of 300 penetration asphalt when tested in accordance with ASTM Test D-5-73. When not otherwise identified, the term liquid will include both flammable and combustible liquid (29 CFR 1910.106(a)(17)).

- *Low Pressure Tank* - a storage tank which has been designed to operate at pressures above 0.5 psig but not more than 15 psig (29 CFR 1910.106(a)(21)).

- *Magazine* – any building or structure, other than an explosives manufacturing building, used for the storage of explosives (29 CFR 1910.109(a)) [Added August 1999].

- *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.

- *Material Safety Data Sheet (MSDS)* - written or printed material which contains information on hazardous chemicals such as common name, physical hazards, health hazards (29 CFR 1910.1200(c)).

- *Mineral Fiber Insulation* - insulation (rock wool or fiberglass) which is composed principally of fibers manufactured from rock, slag, or glass, with or without binders (40 CFR 247.3) **[Added July 1999]**.

- *Mixture* - a heterogenous association of substances where the various individual substances retain their identities and can usually be separated by mechanical means. Includes solutions or compounds but does not include alloys or amalgams (40 CFR 355.20) **[Added April 1999]**.

- *Normal Range* - the normal range of a release is all releases (in pounds or kilograms) of a hazardous substance reported or occurring over any 24-hour period under normal operating conditions during the preceding year. Only releases that are both continuous and stable in quantity and rate may be included in the normal range (40 CFR 302.8(b)) **[Added April 1999]**.

- *Office Occupancy* - the occupancy or use of a building or structure or any portion thereof for the transaction of business, or the rendering or receiving of professional services (29 CFR 1910.106(a)(24)).

- *Pallet* - a portable platform for storing or moving cargo or freight (40 CFR 247.3) **[Added July 1999]**.

- *Paper* - one of two broad subdivisions of paper products, the other being paperboard. Paper is generally lighter in basis weight, thinner, and more flexible than paperboard. Sheets 0.012 in. or less in thickness are generally classified as paper. Its primary uses are for printing, writing, wrapping, and sanitary purposes. However, in this guideline, the term paper is also used as a generic term that includes both paper and paperboard (40 CFR 247.3) **[Added July 1999]**.

- *Paper Product* - any item manufactured from paper or paperboard. The term paper product is used in this guideline to distinguish such items as boxes, doilies, and paper towels from printing and writing papers (40 CFR 247.3) **[Added July 1999]**.

- *Parking Stop* - a barrier used to mark parking spaces and keep parked vehicles from rolling beyond a designated parking area (40 CFR 247.3) **[Added July 1999]**.

- *Perlite Composite Board* - insulation board composed of expanded perlite and fibers formed into rigid, flat, rectangular units with a suitable sizing material incorporated in the product. It may have on one or both surfaces a facing or coating to prevent excessive hot bitumen strike-in during roofing installation (40 CFR 247.3) **[Added July 1999]**.

- *Person* - an individual, trust, firm, joint stock company, corporation (including a government corporation), partnership, association, Federal agency, State, municipality, commission, political subdivision of a State, or any interstate body (40 CFR 247.3) **[Added July 1999]**.

- *Phenolic Insulation* - insulation made with phenolic plastics, which are plastics based on resins made by the condensation of phenols, such as phenol or cresol, with aldehydes (40 CFR 247.3) **[Added July 1999]**.

- *Plastic Fencing* - a barrier with an open-weave pattern that can be used to control drifting snow or sand by restricting the force of wind and to provide a warning or barrier in construction and other areas (40 CFR 247.3) **[Added July 1999]**.

- *Polyisocyanurate Insulation* - insulation produced principally by the polymerization of polymeric polyisocyanates, usually in the presence of polyhydroxyl compounds with the addition of cell stabilizers, blowing agents, and appropriate catalyst to produce a polyisocyanurate chemical structure (40 CFR 247.3) **[Added July 1999]**.

- *Polystyrene Insulation* - an organic foam composed principally of polymerized styrene resin processed to form a homogenous rigid mass of cells (40 CFR 247.3) **[Added July 1999]**.

- *Polyurethane Insulation* - insulation composed principally of the catalyzed reaction product of polyisocyanates and polyhydroxyl compounds, processed usually with a blowing agent to form a rigid foam having a predominantly closed cell structure (40 CFR 247.3) **[Added July 1999]**.

- *Portable Tank* - a closed container having a liquid capacity over 60 gal and not intended for fixed installation (29 CFR 1910.106(a)(25)).

- *Postconsumer Material* - a material or finished product that has served its intended use and has been diverted or recovered from waste destined for disposal, having completed its life as a consumer item. Postconsumer material is a part of the broader category of recovered materials (40 CFR 247.3) **[Added July 1999]**.

- *Postconsumer Recovered Paper* - this includes (40 CFR 247.3) **[Added July 1999]**:
  1. paper, paperboard and fibrous wastes from retail stores, office buildings, homes, and so forth, after they have passed through their end-usage as a consumer item including: Used corrugated boxes; old newspapers; old magazines; mixed waste paper; tabulating cards and used cordage; and
  2. all paper, paperboard, and fibrous wastes that enter and are collected from municipal solid waste.

- *Practicable* - capable of being used consistent with: Performance in accordance with applicable specifications, availability at a reasonable price, availability within a reasonable period of time, and maintenance of a satisfactory level of competition (40 CFR 247.3) **[Added July 1999]**.

- *Present In The Same Form and Concentration As a Product Packaged For Distribution and Use By The General Public* - a substance packaged in a similar manner and present in the same concentration as the substance when packaged for use by the general public, whether or not it is

intended for distribution to the general public or used for the same purpose as when it is packaged for use by the general public (40 CFR 370.2) **[Added April 1999].**

- *Pressure Vessel* - a storage tank or container designed to operate at pressures above 15 psig (29 CFR 1910.106(a)(29)).

- *Printer Ribbon* - a nylon fabric designed to hold ink and used in dot matrix and other types of impact printers (40 CFR 247.3) **[Added July 1999].**

- *Procurement Actions* - this includes (40 CFR 247.2(b) **[Added July 1999]:**
    1. purchases made directly by a procuring agency and purchases made directly by any person (e.g., a contractor) in support of work being performed for a procuring agency, and
    2. any purchases of designated items made "indirectly" by a procuring agency, as in the case of procurements resulting from grants, loans, funds, and similar forms of disbursements of monies.

- *Procurement Item* - any device, good, substance, material, product, or other item, whether real or personal property, which is the subject of any purchase, barter, or other exchange made to procure such item (40 CFR 247.3) **[Added July 1999].**

- *Procuring Agency* - any Federal agency, or any State agency or agency of a political subdivision of a State, which is using appropriated Federal funds for such procurement, or any person contracting with any such agency with respect to work performed under such contract (40 CFR 247.3) **[Added July 1999].**

- *Propellant-Actuated Power Device* – any tool or special mechanized device or gas generator system which is actuated by a smokeless propellant or which releases and directs work through a smokeless propellant charge (29 CFR 1910.109(a)) [Added August 1999].

- *Protection for Exposure* - adequate fire protection for structures on property adjacent to tanks, where there are employees of the establishment (29 CFR 1910.106(a)(27)).

- *Purchasing* - the act of and the function of responsibility for the acquisition of equipment, materials, supplies, and services, including: Buying, determining the need, selecting the supplier, arriving at a fair and reasonable price and terms and conditions, preparing the contract or purchase order, and follow-up (40 CFR 247.3) **[Added July 1999].**

- *Recovered Materials* - waste materials and byproducts which have been recovered or diverted from solid waste, but such term does not include those materials and byproducts generated from, and commonly reused within, an original manufacturing process (40 CFR 247.3) **[Added July 1999].**

- *Recovered Materials, For Purposes of Purchasing Paper and Paper Products* - waste material and byproducts that have been recovered or diverted from solid waste, but such term does not include those materials and byproducts generated from, and commonly reused within, an original manufacturing process. In the case of paper and paper products, the term recovered materials includes (40 CFR 247.3) **[Added July 1999]:**
    1. Postconsumer materials such as--
        a. paper, paperboard, and fibrous wastes from retail stores, office buildings, homes, and so forth, after they have passed through their end-usage as a consumer item, including: Used corrugated boxes; old newspapers; old magazines; mixed waste paper; tabulating cards; and used cordage; and

b. all paper, paperboard, and fibrous wastes that enter and are collected from municipal solid waste, and

2. manufacturing, forest residues, and other wastes such as--
   a. dry paper and paperboard waste generated after completion of the papermaking process (that is, those manufacturing operations up to and including the cutting and trimming of the paper machine reel in smaller rolls of rough sheets) including: Envelope cuttings, bindery trimmings, and other paper and paperboard waste, resulting from printing, cutting, forming, and other converting operations; bag, box, and carton manufacturing wastes; and butt rolls, mill wrappers, and rejected unused stock; and
   b. finished paper and paperboard from obsolete inventories of paper and paperboard manufacturers, merchants, wholesalers, dealers, printers, converters, or others;
   c. fibrous byproducts of harvesting, manufacturing, extractive, or wood-cutting processes, flax, straw, linters, bagasse, slash, and other forest residues;
   d. wastes generated by the conversion of goods made from fibrous material (that is, waste rope from cordage manufacture, textile mill waste, and cuttings); and
   e. fibers recovered from waste water which otherwise would enter the waste stream.

- *Release* - any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles) of any hazardous chemical, extremely hazardous substance, or CERCLA hazardous substance (40 CFR 355.20) **[Added April 1999]**.

- *Reportable Quantity* - for any CERCLA hazardous substance, the reportable quantity established in table 302.4 of 40 CFR part 302, for such substance, for any other substance, the reportable quantity is 1 lb (40 CFR 355.20) **[Added April 1999]**.

- *Re-refined Oils* - used oils from which the physical and chemical contaminants acquired through previous use have been removed through a refining process (40 CFR 247.3) **[Added July 1999]**.

- *Restroom Divider/Partition* - a barrier used to provide privacy in public restroom facilities (40 CFR 247.3) **[Added July 1999]**.

- *Retread Tire* - a worn automobile, truck, or other motor vehicle tire whose tread has been replaced (40 CFR 247.3) **[Added July 1999]**.

- *Rock Wool Insulation* - insulation which is composed principally from fibers manufactured from slag or natural rock, with or without binders (40 CFR 247.3) **[Added July 1999]**.

- *Routine* - routine release is a release that occurs during normal operating procedures or processes (40 CFR 302.8(b)) **[Added April 1999]**.

- *Safety Can* - an approved container of not more than 5 gal capacity, having a spring-closing lid, spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure (29 CFR 1910.106(a)(29)).

- *Select Carcinogens* - any substance that meets one of the following criteria (29 CFR 1910.1450(b)):
  1. it is regulated by OSHA as a carcinogen
  2. it is listed under the category "known to be carcinogens" and the Annual Report on Carcinogens published by the National Toxicology Program (NTP)

3. it is listed under Group 1 (carcinogenic to humans) by the International Agency for Research on Cancer Monographs (IARC)
4. it is listed in either Group 2A or 2B by IARC or under the category "reasonably anticipated to be carcinogens" by NTP, and causes statistically significant tumor incidences in experimental animals under specific situations.

- *Shower Divider/Partition* - a water-proof barrier used to provide privacy in public shower facilities (40 CFR 247.3) **[Added July 1999]**.

- *Small Arms Ammunition* – any shotgun, rifle, pistol, or revolver cartridge, and cartridges for propellant-actuated power devices and industrial guns. Military-type ammunition containing explosive-bursting charges, incendiary, tracer, spotting, or pyrotechnic projectiles is excluded from this definition (29 CFR 1910.109(a)) [Added August 1999].

- *Small Arms Ammunition Primers* – small percussion-sensitive explosive charges, encased in a cup, used to ignite propellant powder (29 CFR 1910.109(a)) [Added August 1999].

- *Smokeless Propellant* – solid propellants, commonly called smokeless powders in the trade, used in small arms ammunition, cannon, rockets, propellant-actuated power devices (29 CFR 1910.109(a)) [Added August 1999].

- *Soaker Hose* - a perforated flexible tubing that is used to deliver gentle irrigation to plants (40 CFR 247.3) **[Added July 1999]**.

- *Specification* - a description of the technical requirements for a material, product, or service that includes the criteria for determining whether these requirements are met. In general, specifications are in the form of written commercial designations, industry standards, and other descriptive references (40 CFR 247.3) **[Added July 1999]**.

- *Spray-in-place Foam* - rigid cellular polyurethane or polyisocyanurate foam produced by catalyzed chemical reactions that hardens at the site of the work. The term includes spray-applied and injected applications (40 CFR 247.3) **[Added July 1999]**.

- *Spray-in-place Insulation* - insulation material that is sprayed onto a surface or into cavities and includes cellulose fiber spray-on as well as plastic rigid foam products (40 CFR 247.3) **[Added July 1999]**.

- *Stable In Quantity and Rate* - a release that is stable in quantity and rate is a release that is predictable and regular in amount and rate of emission (40 CFR 302.8(b)) **[Added April 1999]**.

- *Statistically Significant Increase* - a statistically significant increase in a release is an increase in the quantity of the hazardous substance released above the upper bound of the reported normal range of the release (40 CFR 302.8(b)) **[Added April 1999]**.

- *Structural Fiberboard* - a fibrous-felted, homogenous panel made from lignocellulosic fibers (usually wood, cane, or paper) and having a density of less than 31 lb/ft^3 but more than 10 lb/ft^3. It is characterized by an integral bond which is produced by interfelting of the fibers, but which has not been consolidated under heat or pressure as a separate stage of manufacture (40 CFR 247.3) **[Added July 1999]**.

- *Tire* - the following types of tires: Passenger car tires, light- and heavy-duty truck tires, high-speed industrial tires, bus tires, and special service tires (including military, agricultural, off-the-road, and slow-speed industrial) (40 CFR 247.3) **[Added July 1999]**.

- *Toxic Chemical* - a chemical or chemical category listed in 40 CFR 372.65 (see the column titled Toxic Chemicals in Appendix 3-1) (40 CFR 372.3).

- *Unlisted Hazardous Substances* - a solid waste, as defined in 40 CFR 261.2, which is not excluded from regulation as a hazardous waste under 40 CFR 261.4(b), is a hazardous substance under section 101(14) of CERCLA if it exhibits any of the characteristics identified in 40 CFR 261.20 through 261.24 (40 CFR 302.4(b)) **[Added April 1999]**.

- *Vapor Pressure* - the pressure, measured in psia, exerted by a volatile liquid (29 CFR 1910.106(a)(30)).

HAZARDOUS MATERIALS MANAGEMENT

GUIDANCE FOR CHECKLIST USERS

	REFER TO CHECKLIST ITEMS:
All Facilities	HM.1.1 through HM.1.11
Personnel Training	HM.10.1 through HM.10.3
Pollution Prevention	HM.12.1 through HM.12.4
Hazardous Materials in Laboratories	HM.15.1 through HM.15.4
Releases	HM.20.1 through HM.20.5
Emergency Planning	HM.25.1
Right-To-Know	HM.30.1 through HM.30.3
Flammable/Combustible Liquids Storage	
General	HM.35.1 through HM.35.10
Industrial Areas	HM.40.1 through HM.40.3
Tanks	HM.42.1 through HM.42.5
Compressed Gases Storage	HM.45.1 and HM.45.2
Acid Storage	HM.47.1
Transportation	HM.50.1 through HM.50.12
Ammunition Storage	HM.55.1 through HM.55.11

Records To Review

- Spill records
- Emergency plan documents (Tier I or Tier II reports)
- MSDSs
- Inventory records
- Hazardous substance release reports
- Training records
- Hazard Communication Program
- Chemical Hygiene Plan (labs)

Physical Features To Inspect

- Hazardous material storage areas
- Shop activities
- Shipping and receiving area

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
HM.1 **ALL FACILITIES**	
HM.1.1. The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/ identifying information as the citation).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, interagency agreements, or equivalent state enforcement actions.
HM.1.2. FWS facilities are required to comply with state and local regulations (EO 12088, Section 1-1).	Verify that the facility is complying with state and local requirements. Verify that the facility is operating according to permits issued by the state or local agencies. (NOTE: Issues typically regulated by state and local agencies include: – transportation of hazardous materials – notification requirements – response plan requirements – spill response requirements.)
HM.1.3. Facilities are required to meet regulatory requirements issued since the finalization of this handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).	Determine if any new regulations concerning hazardous materials have been issued since the finalization of this handbook. Verify that the facility is in compliance with newly issued regulations.
HM.1.4. FWS facilities	Determine if the facility has received an NOV relating to hazardous

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should report all NOVs to the Region and Environmental and Facility Compliance (EFC) (MP) **[Revised June 1998].**	materials. Verify that the NOV was reported to the Region and the EFC.
HM.1.5. A master listing of all hazardous materials storage sites should be maintained at the facility (MP).	Determine the locations of all hazardous materials storage areas on the facility by interviewing staff. (NOTE: Hazardous constituents of expired materials discovered during the inventory process, or at any other time, should be identified prior to disposal, see appropriate checklist item in Hazardous Waste Management.)
HM.1.6. Facilities should be receiving specific information from tenant operations (MP).	Verify that FWS facilities with tenant operations receive the following information from their tenants: – information on spills – pesticide application information – copies of permits – EPCRA reports – hazardous waste disposal amounts and destinations – notices of violations – location of hazardous material and hazardous waste storage areas.
HM.1.7. Facilities should coordinate with the local fire department concerning the types of hazardous chemicals used at the facility, the areas where they are used, what they are used for, and the quantities which are used in a given operation (MP).	Determine if the facility has coordinated efforts with the local fire department. Determine if the department is aware of areas that are at high risk for chemical incidents.
HM.1.8. Specific persons	Verify that specific individuals have been designated responsible for

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should be designated responsible for hazardous materials storage areas, and the precise nature of their responsibilities should be specified (MP).	hazardous materials storage areas. Verify that the individuals designated responsible for hazardous materials storage areas are aware of the precise nature of their responsibilities.
HM.1.9. Facilities are required to have on file an MSDS for each hazardous chemical stored and used at the facility (29 CFR 1910.1200(b)(3)(ii), 1910.1200(b)(4)(ii), 1910.1200(b)(6), 1910.1200(g)(1) and 1910.1200(g)(8)).	Verify that an MSDS is on file and readily accessible to workers on all shifts in the workplace for each hazardous material stored or used. (NOTE: These requirements do not apply to: – hazardous waste – tobacco or tobacco products – wood or wood products – articles which are defined as a manufactured item other than a fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: – is formed to a specific shape or design during manufacture – has end use functions dependent in whole or in part upon its shape or design during end use – food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel – any drug as that term is defined in the *Federal Food, Drug, and Cosmetic Act* when it is in its solid, final form for direct administration – cosmetics which are packaged for sale or intended for personal use – any consumer product or hazardous substance as defined in the *Consumer Product Safety Act* and the *Federal Hazardous Substances Act* where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers – ionizing and nonionizing radiation – biological hazards.) (NOTE: This requirement also applies to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions of use.)
HM.1.10. Containers of	Verify that all containers of hazardous chemicals in the workplace are

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hazardous chemicals in the workplace are required to be labeled, tagged, or marked with specific information (29 CFR 1910.1200(b)(3)(i), 1910.1200(b)(4)(i), 1910.1200(b)(5), and 1910.1200(f)(5) through 1910.1200(f) (7)).	labeled with the following information: – identity of the hazardous chemical (same as on MSDS) – appropriate hazard warnings. (NOTE: The facility may use signs, placards, process sheets, batch tickets, operating procedures, or other written materials instead of attaching labels to individual stationary process containers as long as the alternate method identifies the containers to which it is applicable.) (NOTE: Portable containers into which hazardous chemicals are transferred from labeled containers and which are intended only for the immediate use of the employee who performs the transfer are not required to be marked.) (NOTE: This requirement also applies to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions.) (NOTE: These requirements do not apply to: – hazardous waste – tobacco or tobacco products – wood or wood products – articles which are defined as a manufactured item other than a fluid or particle which, under normal conditions of use, does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: – is formed to a specific shape or design during manufacture – has end use functions dependent in whole or in part upon its shape or design during end use – food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel – any drug as that term is defined in the *Federal Food, Drug, and Cosmetic Act* when it is in its solid, final form for direct administration – cosmetics which are packaged for sale or intended for personal use – any consumer product or hazardous substance as defined in the *Consumer Product Safety Act* and the *Federal Hazardous Substances Act* where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use,

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	and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers – ionizing and nonionizing radiation – biological hazards.)
HM.1.11. Specific housekeeping requirements must be met in areas where hazardous materials are stored (29 CFR 1910.176(c)).	Verify that areas where hazardous materials are stored and/or used around the facility are free from accumulations of materials that create a hazard from tripping, fire, explosion, or pest harborage. (NOTE: The following are suggested housekeeping practices: – drums/containers are not leaking and are tightly sealed – drip pans and/or absorbent material are placed under containers – dispensing areas are located away from catch basins and storm drains.)

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HM.10
 	
PERSONNEL TRAINING
 	
HM.10.1. Facilities are required to have a written hazard communication program that is designed to provide all employees with information about the hazardous chemicals to which they are exposed (29 CFR 1910.1200 (b)(1) and 1910.1200 (e)(1)).
	Verify that there is a written hazard communication program that contains the following:
	
	– how general training will be done to inform employees of issues such as MSDSs and hazardous material labels and other warning signs
	– a list of the hazardous chemicals known to be present (can be done for the entire workplace or individual work areas)
	– the methods the facility will use to inform the employees of the hazards associated with nonroutine tasks and the hazards associated with chemicals contained in unlabeled pipes in their work areas:
	  – identity of the hazardous chemicals contained
	  – appropriate hazard warning
	– details of employee training.
	
	Verify that, if the facility is operated such that employees from more than one employer may be exposed (for example, employees of a construction contractor working onsite), the hazard communication program also addresses what the facility will do to:
	
	– provide the other employees onsite with access to MSDSs for each hazardous chemical the other employer's employees may be exposed to while working
	– inform the other employers of the labeling system used in the workplace
	– inform the other employers of any precautionary measures that need to be taken to protect employees during the workplace's normal operating conditions and in foreseeable emergencies.
	
	(NOTE: This requirement also applies to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions.)
	
	(NOTE: These requirements do not apply to:
	– hazardous waste
	– tobacco or tobacco products
	– wood or wood products
	
	– articles which are defined as a manufactured item other than a

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	fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: – is formed to a specific shape or design during manufacture – has end use functions dependent in whole or in part upon its shape or design during end use – food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel – any drug as that term is defined in the *Federal Food, Drug, and Cosmetic Act* when it is in its solid, final form for direct administration – cosmetics which are packaged for sale or intended for personal use – any consumer product or hazardous substance as defined in the *Consumer Product Safety Act* and the *Federal Hazardous Substances Act* where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers – ionizing and nonionizing radiation – biological hazards.)
HM.10.2. Personnel working with hazardous materials are required to be trained in their proper use and potential hazards (29 CFR 1910.1200(b)(3)(iii), 1910.1200(b)(4)(iii), 1910.1200(b)(6), and 1910.1200(h)).	Verify that employees are provided with information and trained on hazardous chemicals in their workplace at the time of initial assignment and when ever a new hazard is introduced into the workplace. Verify that employees are informed of the following: – any operations in their work areas where hazardous chemicals are present – the location and availability of the written hazard communication program, including the required lists of hazardous chemicals, and material safety data sheets. Verify that training includes: – methods and observations to use to detect a release – the physical and health hazards of the chemicals in the work areas – protective measures and procedures to use

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	– the details of the hazard communication program developed by the facility, including an explanation of the labeling system, MSDSs, and how employees can obtain and use the appropriate hazard information. (NOTE: These requirements do not apply to: – hazardous waste – tobacco or tobacco products – wood or wood products – articles which are defined as a manufactured item other than a fluid or particle which, under normal conditions of use, does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: – is formed to a specific shape or design during manufacture – has end use functions dependent in whole or in part upon its shape or design during end use – food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel – any drug as that term is defined in the *Federal Food, Drug, and Cosmetic Act* when it is in its solid, final form for direct administration – cosmetics which are packaged for sale or intended for personal use – any consumer product or hazardous substance as defined in the *Consumer Product Safety Act* and the *Federal Hazardous Substances Act* where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers – ionizing and nonionizing radiation – biological hazards.) (NOTE: These requirements also apply, as necessary, for protection in event of a spill or leak, to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions of use.)

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HM.10.3. Facilities should designate a HAZCOM Program Coordinator at each station (MP) **[Added July 1999].**	Verify that a HAZCOM Program Coordinator is designated as a point of contact at each station.

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HM.12 **POLLUTION PREVENTION**	
HM.12.1 Pollution prevention plans are required to be developed by 31 December 1995 (EO 12856, Section 3-302(d)) **[Revised October 1998].**	Verify that a pollution prevention plan has been prepared that outlines how pollution reduction goals will be met. Verify that the plan addresses key areas and responsibilities. Verify that the plan follows guidance issued by Federal and state regulators and internal policies.
HM.12.2. It is Service policy that, where practicable, waste source reduction and waste recycling to minimize production of pollutants will be used (RP, 560 FW 2.2) **[Citation Revised June 1998].**	Verify that the facility has a plan to recycle, reuse material, and substitute less hazardous products to greatest extent possible.
HM.12.3 Pollution prevention initiatives are required to be considered in all plans, drawings, work statements, specifications, or other product descriptions (EO 13101, Section 401) **[Added July 1999].**	Verify that the following are considered in plans, drawings, work statements, specifications, or other product descriptions, as appropriate: – elimination of virgin material requirements – use of biobased products – use of recovered materials – reuse of product – life cycle cost – recyclability – use of environmentally preferable products – waste prevention (including toxicity reduction or elimination) – ultimate disposal.

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HM.12.4. Government agencies are required to increase their purchases of products containing recovered materials (RCRA, Section 6002(c)(1); EO 13101, and 40 CFR 247.2 through 247.17) **[Added July 1999].**	(NOTE: This applies to all procuring agencies and to all procurement actions involving items designated by EPA, where the procuring agency purchases $10,000 or more worth of one of these items during the course of a fiscal year, or where the cost of such items or of functionally equivalent items purchased during the preceding fiscal year was $10,000 or more. This guideline applies to Federal agencies, to State and local agencies using appropriated Federal funds to procure designated items, and to persons contracting with any such agencies with respect to work performed under such contracts. Federal procuring agencies should note that the requirements of RCRA section 6002 apply to them whether or not appropriated Federal funds are used for procurement of designated items. The $10,000 threshold applies to procuring agencies as a whole rather than to agency subgroups such as regional offices or subagencies of a larger department or agency.) Verify that procured Comprehensive Procurement Guideline (CPG) designated items are composed of the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, considering such guidelines. Verify that, if the purchase of products containing recovered materials does not meet EPA Guidelines, the facility has written justification that products are not available competitively within a reasonable timeframe, do not meet appropriate performance standards, or are only available at unreasonable prices. (NOTE: Written justification is not required for purchases below the micropurchase threshold.) (NOTE: For each designated CPG, USEPA has issued a Recovered Materials Advisory notice (RMAN) which establishes the recommend recycle content level for a given product. The following is the current list of CPG categories and products: - paper and paper products, excluding building and construction paper grades - vehicular products: - lubricating oils containing re-refined oil, including engine lubricating oils, hydraulic fluids, and gear oils, excluding marine and aviation oils (this provision does not preclude the acquisition of biobased (e.g., vegetable) oils) - tires, excluding airplane tires - reclaimed engine coolants, excluding coolants used in non-vehicular applications. - construction products: - building insulation products, including the following items: - loose-fill insulation, including but not limited to cellulose

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	fiber, mineral fibers (fiberglass and rock wool), vermiculite, and perlite - blanket and batt insulation, including but not limited to mineral fibers (fiberglass and rock wool) - board (sheathing, roof decking, wall panel) insulation, including but not limited to structural fiberboard and laminated paperboard products, perlite composite board, polyurethane, polyisocyanurate, polystyrene, phenolics, and composites - spray-in-place insulation, including but not limited to, foam-in-place polyurethane and polyisocyanurate, and spray-on cellulose - structural fiberboard and laminated paperboard products for applications other than building insulation, including building board, sheathing, shingle backer, sound deadening board, roof insulating board, insulating wallboard, acoustical and non-acoustical ceiling tile, acoustical and non-acoustical lay-in panels, floor underlayments, and roof overlay (coverboard) - cement and concrete, including concrete products such as pipe and block, containing coal fly ash or ground granulated blast furnace (GGBF) slag - carpet made of polyester fiber for use in low- and medium-wear applications - floor tiles and patio blocks containing recovered rubber or plastic - shower and restroom dividers/partitions containing recovered plastic or steel - consolidated latex paint used for covering graffiti - reprocessed latex paint used for interior and exterior architectural applications such as wallboard, ceilings, and trim; gutter boards; and concrete, stucco, masonry, wood, and metal surfaces. - transportation products: - traffic barricades and traffic cones used in controlling or restricting vehicular traffic - parking stops made from concrete or containing recovered plastic or rubber - channelizers containing recovered plastic or rubber delineators containing recovered plastic, rubber, or steel flexible delineators containing recovered plastic. - park and recreation products: - playground surfaces and running tracks containing recovered rubber or plastic -- plastic fencing containing recovered plastic for use in controlling snow or sand drifting and as a warning/safety

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	barrier in construction or other applications. - landscaping products: - hydraulic mulch products containing recovered paper or recovered wood used for hydroseeding and as an over-spray for straw mulch in landscaping, erosion control, and soil reclamation - compost made from yard trimmings, leaves, and/or grass clippings for use in landscaping, seeding of grass or other plants on roadsides and embankments, as a nutritious mulch under trees and shrubs, and in erosion control and soil reclamation - garden and soaker hoses containing recovered plastic or rubber - lawn and garden edging containing recovered plastic or rubber. - non-paper office products: - office recycling containers and office waste receptacles - plastic desktop accessories - toner cartridges - binders - plastic trash bags - printer ribbons - plastic envelopes. - Miscellaneous products: - pallets containing recovered wood, plastic, or paperboard. (NOTE: The CPG guidelines do not apply to purchases of designated items which are unrelated to or incidental to Federal funding, i.e., not the direct result of a contract or agreement with, or a grant, loan, or funds disbursement to, a procuring agency. The guidelines also do not apply to purchases made by private party recipients (e.g., individuals, non-profit organizations) of Federal funds pursuant to grants, loans, cooperative agreements, and other funds disbursements.)

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HM.15 **HAZARDOUS MATERIALS IN LABORATORIES**	(NOTE: The requirements for hazardous materials in laboratories do not apply to: – uses of hazardous chemicals that do not meet the definition of laboratory use – laboratory uses of hazardous chemicals which provide no potential for exposure such as: – commercially prepared kits such as pregnancy tests in which all the reagents needed to conduct the test are contained in the kit – procedures using chemically-impregnated test media such as Dip- and Read tests.)
HM.15.1. Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to have a Chemical Hygiene Plan (29 CFR 1910.1450(e)).	Verify that a written Chemical Hygiene plan exists and is: – capable of protecting employees from health hazards associated with hazardous chemicals in the laboratory – capable of keeping exposure to regulated substances below required limits. Verify that the plan is readily available to employees and employee representatives. Verify that the plan includes the following elements and indicates specific measures to be taken when laboratory work involves the use of hazardous chemicals: – standard operating procedures relevant to safety and health considerations to be followed – criteria that will be used to determine and implement control measures to reduce employee exposure to hazardous chemicals including the engineering controls, the use of personal protective equipment and hygiene practices – a requirement that fume hoods and other protective equipment are functioning properly and specific measures taken to ensure proper and adequate performance of the equipment – provisions for employee information and training – circumstances and situations which require prior approval from a designated individual – provisions for medical consultations and medical exams – designation of individuals responsible for the implementation of the plan – assignment of a Chemical Hygiene Officer and, if appropriate, establishment of a Chemical Hygiene Committee – provisions for additional employee protection when working with

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	particularly hazardous substances, including, select carcinogens, reproductive toxins and substances which have a high degree of acute toxicity. Provisions might include: – establishment of a designated area – use of containment devices such as fume hoods or glove boxes – procedures for safe removal of contaminated waste – decontamination procedures. Verify that the plan is reviewed annually and updated as needed.
HM.15.2. Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to provide employees with information and training concerning the hazards of the chemicals in their work areas (29 CFR 1910.1450(f)).	Verify that information about the hazards of the chemicals in the work area is provided at the time of initial employment and prior to assignment involving new exposure risks. (NOTE: The frequency of refresher training is to be determined by the facility.) Verify that employees are informed of: – the requirements to be trained and informed – the location and availability of the Chemical Hygiene Plan – the permissible exposure limits for OSHA regulated substances or recommended exposure levels for other hazardous chemicals where there is no OSHA limit – signs and symptoms associated with exposure – the location and known availability of known reference material such as MSDSs. Verify that training includes: – methods and observations that may be used to detect the presence of or release of a hazardous chemical – the physical and health hazards of chemicals in the work area – the measures employees can take to protect themselves – applicable details of the Chemical Hygiene Plan.
HM.15.3. Facilities	Verify that labels on incoming containers of hazardous chemicals are

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engaged in the laboratory use of hazardous chemicals (see definitions) are required to follow specific handling and operating procedures (29 CFR 1910.1450(h)).	not removed or defaced. Verify that MSDSs are maintained and readily accessible to lab employees. Verify that, if the facility is developing chemical substances, a determination is made as to whether or not it is a hazardous chemical if the composition of the chemical is known and the chemical is produced only for use by the laboratory. Verify that, if the facility is developing chemical substances as a byproduct and the composition is not known, it is assumed to be hazardous. Verify that, if the chemical substance is produced for another user outside of the lab, the lab meets the standards outlined in 29 CFR 1910.1200 (checklist items HM.1.9, HM.1.10, HM.10.1, and HM.10.2).
HM.15.4. Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to maintain specific records (29 CFR 1910.1450(j)).	Verify that records of monitoring for employee exposure are maintained along with any medical records or test results.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
HM.20 **RELEASES**	
HM.20.1. Absorbent materials should be available for spill and/or release cleanup in areas where hazardous materials are used or stored (MP).	Verify that absorbent materials are available for spill cleanup.
HM.20.2. Releases in excess or equal to RQs of hazardous substances shall be reported to the NRC immediately (40 CFR 302.1 through 302.6) **[Revised April 1999].**	Verify that a release (other than a federally permitted release or application of a pesticide) of a hazardous substance from a vessel or an offshore or an onshore facility is reported to the NRC immediately after the release is identified. (NOTE: See Appendix 3-1 for the RQ of listed hazardous substances. The RQ of an unlisted hazardous substance (see definitions) is 100 lb, except for those unlisted hazardous wastes which exhibit extraction procedure (EP) toxicity identified in 40 CFR 261.24. Unlisted hazardous wastes which exhibit EP toxicity have the RQs listed in Appendix 3-1 for the contaminant on which the characteristic of EP toxicity is based. The RQ applies to the waste itself, not merely to the toxic contaminant. If an unlisted hazardous waste exhibits EP toxicity on the basis of more than one contaminant, the RQ for that waste shall be the lowest of the RQ listed in Appendix 3-1 for those contaminants. If an unlisted hazardous waste exhibits the characteristic of EP toxicity and one or more of the other characteristics referenced in 40 CFR 302.4(b), the RQ for that waste is the lowest of the applicable reportable quantities.) Verify that, if mixtures or solutions of hazardous substances are released, except for radionuclides, it is reported when either of the following occur: – the quantity of all hazardous constituents of the mixture or solution is known and a reportable quantity or more of any hazardous constituent is released – the quantity of one or more of the hazardous constituents of the mixture or solution is unknown and the total amount of the mixture or solution released equals or exceeds the reportable quantity for the hazardous constituent with the lowest reportable quantity. (NOTE: Radionuclides are subject to these notification requirements

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	only in the following circumstances: – if the identity and quantity (in curies) of each radionuclide in a released mixture or solution is known, the ratio between the quantity released (in curies) and the RQ for the radionuclide must be determined for each radionuclide. The only such releases notification requirements are those in which the sum of the ratios for the radionuclides in the mixture or solution released is =/> 1 – if the identity of each radionuclide in a released mixture or solution is known but the quantity released (in curies) of one or more of the radionuclides is unknown, the only such releases subject to notification requirements are those in which the total quantity (in curies) of the mixture or solution released is =/> the lowest RQ of any individual radionuclide in the mixture or solution – if the identity of one or more radionuclides in a released mixture or solution is unknown (or if the identity of a radionuclide released by itself is unknown), the only such releases subject to notification requirements are those in which the total quantity (in curies) released is equal to or greater than either one curie or the lowest RQ of any known individual radionuclide in the mixture or solution, whichever is lower.) (NOTE: The following categories of releases are exempt from the notification requirements: – releases of those radionuclides that occur naturally in the soil from land holdings such as parks, golf courses, or other large tracts of land – releases of naturally occurring radionuclides from land disturbance activities, including farming, construction, and land disturbance incidental to extraction during mining activities, except that which occurs at uranium, phosphate, tin, zircon, hafnium, vanadium, monazite, and rare earth mines. Land disturbance incidental to extraction includes: land clearing; overburden removal and stockpiling; excavating, handling, transporting, and storing ores and other raw – materials; and replacing materials in mined-out areas as long as such materials have not been beneficiated or processed and do not contain elevated radionuclide concentrations (greater than 7.6 pCi/g of Uranium-238, 6.8 pCi/g of Thorium-232, or 8.4 pCi/g of Radium-226) – releases of radionuclides from the dumping and transportation of coal and coal ash (including fly ash, bottom ash, and boiler slags), including the dumping and land spreading operations that occur during coal ash uses – releases of radionuclides from piles of coal and coal ash, including fly ash, bottom ash, and boiler slags.)

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	(NOTE: Except for releases of radionuclides, notification of the release of an RQ of solid particles of antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, thallium, or zinc is not required if the mean diameter of the particles released is larger than 100 micrometers (0.004 in.). Verify that spills in excess of the RQs listed in Appendix 3-1 have been reported. Verify that a procedure is in place for the notification of the NRC immediately after becoming aware of the release. Verify that, if mixtures or solutions of hazardous substances are released, except for radionuclides, it is reported when: – the quantity of all hazardous constituents of the mixture or solution is known and an RQ or more of any hazardous constituent is released – the quantity of one or more of the hazardous constituents of the mixture or solution is unknown and the total amount of the mixture or solution released equals or exceeds the RQ for the hazardous constituent with the lowest RQ. (NOTE: Notification requirements for radionuclide releases are not included in this protocol.)
HM.20.3. Releases of an RQ or greater should be reported to the Region and Environmental and Facility Compliance (EFC) (MP)**[Revised June 1998].**	Verify that releases of an RQ or greater are reported to the Region and the EFC.

HM.20.4. Specific notification requirements are required to be met for releases of hazardous substances that are continuous and stable in quantity and rate (40 CFR 302.8) **[Revised April 1999].**	Determine if there are any releases that are continuous and stable in quantity and rate.
	
	Verify that the following notifications have been given:
	
	– initial telephone notification
	– initial written notification within 30 days of the initial telephone notification
	– follow-up notification within 30 days of the first anniversary date of the initial written notification
	– notification of changes in:
	  – the composition or source of the release
	  – information submitted in the initial written notification

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	– the follow-up notification required on the first anniversary date of the initial written – notification of when there is an increase in the quantity of the hazardous sub stances in any 24-h period that represents a statistically significant increase. Verify that, prior to making an initial telephone notification of a continuous release, the person in charge of a facility or vessel establishes a sound basis for qualifying the release for reporting by one of the following: – using release data, engineering estimates, knowledge of operating procedures, or best professional judgment to establish the continuity and stability of the release – reporting the release to the NRC for a period sufficient to establish the continuity and stability of the release. Verify that when a basis has been established to qualify the release for reduced reporting, initial notification to the NRC is made by telephone. Verify that the notification is identified as an initial continuous release notification report and includes the following information: – the name and location of the facility or vessel – the name and identity of the hazardous substance being released. Verify that initial written notification of a continuous release is made to the appropriate EPA Regional Office for the geographical area where the releasing facility or vessel is located and occurs within 30 days of the initial telephone notification to the NRC. Verify that the initial written notification includes, for each release for which reduced reporting as a continuous release is claimed, the following information: – the name of the facility or vessel; the location, including the latitude and longitude; the case number assigned by the NRC or the EPA; the Dun and Bradstreet number of the facility, if available; the port of registration of the vessel; the name and telephone number of the person in charge of the facility or vessel – the population density within a one-mile radius of the facility or vessel, described in terms of the following ranges: 0-50 persons,

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	51-100 persons, 101-500 persons, 501-1,000 persons, more than 1,000 persons – the identity and location of sensitive populations and ecosystems within a one-mile radius of the facility or vessel (e.g., elementary schools, hospitals, retirement communities, or wetlands) – for each hazardous substance release claimed to qualify for reporting under CERCLA section 103(f)(2), the following information: – the name/identity of the hazardous substance; the CAS Registry Number for the substance (if available); and if the substance being released is a mixture, the components of the mixture and their approximate concentrations and quantities, by weight – the upper and lower bounds of the normal range of the release (in pounds or kilograms) over the previous year – the source(s) of the release (e.g., valves, pump seals, storage tank vents, stacks). If the release is from a stack, the stack height (in feet or meters) – the frequency of the release and the fraction of the release from each release source and the specific period over which it occurs – a brief statement describing the basis for stating that the release is continuous and stable in quantity and rate – an estimate of the total annual amount that was released in the previous year (in pounds or kilograms) – the environmental medium(a) affected by the release, such as the name of the surface water body; the stream order or average flowrate (in cubic feet/second) and designated use; the surface area (in acres) and average depth (in feet or meters) of the lake; the location of public water supply wells within 2 mi if on or underground. – a signed statement that the hazardous substance release described is continuous and stable in quantity and rate and that all reported information is accurate and current to the best knowledge of the person in charge. Verify that, within 30 days of the first anniversary date of the initial written notification, each hazardous substance release reported is evaluated to verify and update the information submitted in the initial written notification. Verify that the followup notification contains all the information required in the initial notification, plus notification of changes in the

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	release. (NOTE: Instead of the initial written report or follow-up report, a copy of the Toxic Release Inventory (TRI) form submitted under SARA Title III section 313 for the previous 1 July may be used if the following information is added: – the population density within a 1 mi radius of the Federal facility or vessel – the identify and location of sensitive populations and ecosystems within a 1 mi radius of the Federal facility or vessel (e.g., elementary schools, hospitals, retirement communities, or wetlands) – the following for each hazardous substance release that qualifies for reporting under CERCLA section 103(f)(2): – the upper and lower bounds of the normal range of the release over the previous year – the frequency of the release and the fraction of the release from each release source and the specific period over which it occurs – a brief statement describing the basis for stating that the release is continuous and stable in quantity and rate – a signed statement that the release is continuous and stable in quantity and rate and that all reported information is accurate and current to the best knowledge of the person in charge.) (NOTE: If there is a change in any information submitted in the initial written notification or the followup notification other than a change in the source, composition, or quantity of the release, the person in charge of the facility or vessel shall provide written notification of the change to the EPA Region for the geographical area where the facility or vessel is located, within 30 days of determining that the information submitted previously is no longer valid. Notification shall include the reason for the change, and the basis for stating that the release is continuous and stable under the changed conditions. Notification of changes shall include the case number assigned by the NRC or the EPA and also the signed certification statement.) Verify that notification of a statistically significant increase in a release is made to the NRC as soon as there is knowledge of the release. (NOTE: A determination of whether an increase is a ``statistically significant increase'' shall be made based upon calculations or

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	estimation procedures that will identify releases that exceed the upper bound of the reported normal range.) Verify that each hazardous substance release is evaluated annually to determine if changes have occurred in the information submitted in the initial written notification, the followup notification, and/or in a previous change notification. (NOTE: Where necessary to satisfy the requirements of this section, the person in charge may rely on recent release data, engineering estimates, the operating history of the facility or vessel, or other relevant information to support notification. All supporting documents, materials, and other information shall be kept on file at the facility, or in the case of a vessel, at an office within the United States in either a port of call, a place of regular berthing, or the headquarters of the business operating the vessel.) Verify that supporting materials are kept on file for a period of 1 yr and substantiate the reported normal range of releases, the basis for stating that the release is continuous and stable in quantity and rate, and the other information in the initial written report, the followup report, and the annual evaluations. (NOTE: Multiple concurrent releases of the same substance occurring at various locations with respect to contiguous plants or installations upon contiguous grounds that are under common ownership or control may be considered separately or added together in determining whether such releases constitute a continuous release or a statistically significant; whichever approach is elected for purposes of determining whether a release is continuous also must be used to determine a statistically significant increase in the release.)
HM.20.5. Federal facilities at which any hazardous chemical is	Determine if there has been a release of an extremely hazardous substance or CERCLA hazardous substance in excess of the RQ,

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produced, used, or stored and at which there is a release of a RQ of any extremely hazardous substance or CERCLA hazardous substance are required to provide emergency release notification (EO 12856, 40 CFR 355.40 and 355 Appendix A) **[Revised April 1999]**.	Verify that, if a release has occurred in excess of the reportable quantity, the following are immediately notified: – community emergency coordinator for the local emergency planning committee of any area likely to be affected by the release – state emergency response commission of any state likely to be affected by the release – local emergency response personnel if there is no local emergency planning committee. Verify that the notice contains the following, to the extent known at the time of notice, so long as no delay in notice or emergency response results: – the chemical name or identity of any substance involved in the release – an indication of whether the substance is an extremely hazardous substance – an estimate of the quantity of any such substance that was released into the environment – the time and duration of the release – the medium or media into which the release occurred – any known or anticipated acute or chronic health risks associated with the emergency, and, where appropriate, advice regarding medial attention necessary for exposed individuals – proper precautions to take as a result of the release, including evacuation (unless such information is readily available to the community emergency coordination because of the local emergency plan) – the names and telephone numbers of the person or persons to be contacted for further information. Verify that, after the immediate verbal notification, a written follow-up emergency notification is produced which contains the same information detailed in the verbal notice plus: – actions taken to respond to and contain the release – any known or anticipated acute or chronic health risks associated with the risk – advice regarding medical attention necessary for exposed individuals as necessary. (NOTE: These requirements do not apply to: – any release which results in exposure to persons solely within the boundaries of the facility

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	– any release which is a federally permitted release as defined in section 101 (10) of CERCLA – any release that is continuous and stable in quantity and rate under the definitions in 40 CFR 302.8(b) (see checklist item HM.20.4) – any release of a pesticide product exempt from CERCLA section 103(a) reporting under section 103(e) of CERCLA – any release not meeting the definition of release under Section 101(22) of CERCLA, and therefore exempt from Section 103(a) reporting – any radionuclide release which occurs: – naturally in soil from land holdings such as parks, golf courses, or other large tracts of land naturally from land disturbance activities, including farming, construction, and land disturbance incidental to extraction during mining activities, except that which occurs at uranium, phosphate, tin, zircon, hafnium, vanadium, monazite, and rare earth mines – from the dumping and transportation of coal and coal ash (including fly ash, bottom ash, and boiler slags), including the dumping and land spreading operations that occur during coal ash uses – from piles of coal and coal ash, including fly ash, bottom ash, and boiler slags.) (NOTE: Exemption from these notification requirements does not include exemption from requirements for: – initial notifications as defined in 40 CFR 302.8(d) and (e) (see checklist item HM.20.4) – notification of a ``statistically significant increase,'' – notification of a ``new release'' – notification of a change in the normal range of the release as required under 40 CFR 302.8(g)(2) (see checklist item HM.20.4).)

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HM.25 **EMERGENCY PLANNING** **HM.25.1.** Facilities where there are extremely hazardous substances present in amounts equal to or greater than the thresh old limits found in Appendix 3-1 are required to follow specific emergency planning procedures (EO 12856; 40 CFR 355.30, and 355 Appendix A) **[Revised April 1999].**	Determine if there are any of the items listed in Appendix 3-1 as extremely hazardous substances in amounts equal to or greater than those listed in Appendix 3-1. (NOTE: The requirements of this section also apply to any facility at which there is present a n amount of any extremely hazardous substance designated, after public notice and opportunity for comment, by the Commission or the Governor for the State in which the facility is located.) (NOTE: For purposes of this section, an amount of any extremely hazardous substance means the total amount of an extremely hazardous substance present at any one time at a facility at concentrations greater than one percent by weight, regardless of location, number of containers, or method of storage.) Verify that the Federal facility has notified the Commission (see definitions) that it is subject to the emergency planning requirements within 60 days after the Federal facility first becomes subject to these requirements. Verify that the Federal facility has a designated representative who participates in the local emergency planning process as a facility emergency response coordinator. Verify that the Federal facility has notified the local emergency planning committee, or governor if there is no committee, of the Federal facility representative within 30 days after establishment of a local emergency planning committee. Verify that the local emergency planning committee is informed of any changes occurring at the facility which may be relevant to emergency planning. Verify that, upon request of the local emergency planning committee, the facility promptly provides to the committee any information necessary for development or implementation of the local emergency plan. (NOTE: If a container or storage vessel holds a mixture or solution of

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	an extremely hazardous substance, then the concentration of extremely hazardous substance, in weight percent (greater than 1 percent sign), shall be multiplied by the mass (in pounds) in the vessel to determine the actual quantity of extremely hazardous substance therein. Extremely hazardous substances that are solids are subject to either of two threshold planning quantities (i.e., 500/10,000 lb). The lower quantity applies only if the solid exists in powdered form and has a particle size less than 100 microns; or is handled in solution or in molten form; or meets the criteria for a NFPA rating of 2, 3 or 4 for reactivity. If the solid does not meet any of these criteria, it is subject to the upper (10,000 lb) TPQ. The 100 micron level may be determined by multiplying the weight percent of solid with a particle size less than 100 microns in a particular container by the quantity of solid in the container. The amount of solid in solution may be determined by multiplying the weight percent of solid in the solution in a particular container by the quantity of solution in the container. The amount of solid in molten form must be multiplied by 0.3 to determine whether the lower threshold planning quantity is met.)

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HM.30 **RIGHT-TO-KNOW** **HM.30.1.** Federal facilities that are required to prepare or have available an MSDS for a hazardous chemical under OSHA, are required to meet specific MSDS reporting requirements for planning purposes (EO 12856; 40 CFR 370.20(a) through 370.20(c), 370.21, and 370.28) **[Revised April 1999]**.	(NOTE: The emergency response commission consists of the State Emergency Response Commission and the local Emergency Planning Committee. Some states have only one of these.) Verify that MSDSs (or listing as appropriate) are submitted to the emergency response commission and the fire department with jurisdictions for each hazardous chemical present according to the following thresholds: – for all extremely hazardous substances present in amounts greater than or equal to 500 lb (227 kg, approximately 55 gal) or the threshold planning quantity (see Appendix 3-1), whichever is lower – for gasoline (all grades combined) in amounts greater than or equal to 75,000 gal (or approximately 283,900 L) when the gasoline is in tanks entirely underground at a retail gas station that was in compliance during the preceding CY with all applicable UST regulations – for diesel fuel (all grades combined) in amounts greater than or equal to 100,000 gal (or approximately 378,500 L) when the diesel is in tanks entirely underground at a retail gas station that was in compliance during the preceding CY with all applicable UST regulations – for all other hazardous chemicals present at any one time in amounts equal to or greater than 10,000 lb (4540 kg) (not all hazardous chemicals requiring an MSDS are listed in Appendix 3-1). (NOTE: For the purposes of these threshold values, a retail gas station is a retail facility engaged in selling gasoline and/or diesel fuel principally to the public, for motor vehicle use on land.) (NOTE: Commonly overlooked substances requiring an MSDS are propane and petroleum based fuels. For diesel and unleaded gasoline, 10,000 lb equals approximately 1379 gal using the weight of 7.25 lb/gal.) Verify that, if MSDSs have not been submitted, the following have been submitted: – a list of hazardous chemicals for which the MSDS is required,

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	grouped by hazard category – the chemical or common name of each hazardous chemical – any hazardous component of each hazardous chemical, except when reporting a mixture. Verify that revised MSDSs are provided within 3 mo after the discovery of significant new information concerning the hazardous chemical. (NOTE: These reporting requirements for a hazardous chemical that is a mixture of hazardous chemicals can be fulfilled by doing one of the following: – providing the required information on each component in the mixture that is a hazardous chemical – providing the required information on the mixture itself.)
HM.30.2. Federal facilities, that are required to prepare or have available a MSDS sheet for a hazardous chemical under OSHA, are required to meet specific inventory reporting requirements for planning purposes (EO 12856; 40 CFR 370.20(a), 370.20(b), 370.20(d), 370.25, and 370.28) **[Revised April 1999]**.	Verify that the Tier I (or Tier II), Hazardous Chemical Inventory forms, are submitted to the emergency response commission and the fire department with jurisdiction for each hazardous chemical present according to the following thresholds: – for all extremely hazardous substances present in amounts greater than or equal to 500 lb (227 kg, approximately 55 gal) or the threshold planning quantity (see Appendix 3-1), whichever is lower – for gasoline (all grades combined) in amounts greater than or equal to 75,000 gal (or approximately 283,900 L) when the gasoline is in tanks entirely underground at a retail gas station that was in compliance during the preceding CY with all applicable UST regulations – for diesel fuel (all grades combined) in amounts greater than or equal to 100,000 gal (or approximately 378,500 L) when the diesel is in tanks entirely underground at a retail gas station that was in compliance during the preceding CY with all applicable UST regulations – for all other hazardous chemicals present at any one time in amounts equal to or greater than 10,000 lb (4540 kg) (not all hazardous chemicals requiring an MSDS are listed in Appendix 3-1). (NOTE: For the purposes of these threshold values, a retail gas station is a retail facility engaged in selling gasoline and/or diesel fuel principally to the public, for motor vehicle use on land.) (NOTE: Commonly overlooked substances requiring a MSDS are

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	propane and petroleum based fuels.) Verify that reports are submitted annually. (NOTE: These reporting requirements for a hazardous chemical that is a mixture of hazardous chemicals may be fulfilled by doing one of the following: – providing the required information on each component in the mixture that is a hazardous chemical - providing the required information on the mixture itself.)
HM.30.3. As of 1 July 1995, facilities that manufacture, process, or otherwise use a toxic chemical (see Appendix 3-1) in excess of applicable threshold quantities and that have 10 or more employees are subject to certain reporting and recordkeeping requirements (EO 12856; 40 CFR 372.10(a), 372.10(c), 372.10(d), 372.22 through 372.38) **[Revised April 1999].**	(NOTE: These reporting and recordkeeping requirements apply to facilities that meet all of the following criteria for a calendar year: – the facility has 10 or more full-time employees – the facility is in Standard Industrial Classification (SIC) (as in effect on 1 January 1987) major group codes 10 (except 1011, 1081, and 1094), 12 (except 1241), or 20 through 39; industry codes 4911, 4931, or 4939 (limited to facilities that combust coal and/or oil for the purpose of generating power for distribution in commerce); or 4953 (limited to facilities regulated under the RCRA, subtitle C, 42 U.S.C. section 6921 et seq.), or 5169, or 5171, or 7389 (limited to facilities primarily engaged in solvent recovery services on a contract or fee basis) by virtue of the fact that it meets one of the following criteria: – the facility is an establishment with a primary SIC major group or industry code in the above list – the facility is a multi-establishment complex where all establishments have primary SIC major group or industry codes in the above list – the facility is a multi-establishment complex in which one of the following is true: – the sum of the value of services provided and/or products shipped and/or produced from those establishments that have primary SIC major group or industry codes in the above list is greater than 50 percent of the total value of all services provided and/or products shipped from and/or produced by all establishments at the facility – one establishment having a primary SIC major group or industry code in the above list contributes more in terms of value of services provided and/or products shipped from and/or produced at the facility than any other establishment within the facility. – the facility manufactured (including imported), processed, or otherwise used a toxic chemical in excess of an applicable

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	threshold quantity of that chemical.) Determine if Federal facilities meeting the listed criteria exceed the following threshold levels: – has manufactured or processed 25,000 lb/yr of toxic chemicals – has used 10,000 lb of toxic chemicals in other ways during the year. (NOTE: Articles containing toxic chemicals are not included in calculations of total toxic chemical present. See 40 CFR 372.30(b)(3) for procedure to determine whether an excess has occurred.) Verify that a completed USEPA Form R, Toxic Chemical Release Form is submitted annually, for each toxic chemical exceeding threshold levels in 1 calendar year to the USEPA and state on or before 1 July of the next year. (NOTE: A facility may apply an alternate threshold of 1 million lb/yr to a chemical if it is calculated that the facility would have an annual reportable amount of that toxic chemical not exceeding 500 lb for the combined total quantities released at the facility, disposed within the facility, treated at the facility (as represented by amounts destroyed or converted by treatment processes), recovered at the facility as a result of recycle operations, combusted for the purpose of energy recovery at the facility, and amounts transferred from the facility to off-site locations for the purpose of recycle, energy recovery, treatment, and/or disposal.) Verify that, if a facility uses the alternate reporting threshold, they submit the required certification instead of the EPA Form R. Verify that, when more than one threshold applies to facility activities, the facility reports if it exceeds any applicable threshold and reports on all activities at the facility involving the chemical unless otherwise exempted. Verify that, when a facility manufactures, processes, or otherwise uses more than one member of a chemical category listed in 40 CFR 372.65(c), the facility reports if it exceeds any applicable threshold for the total volume of all the members of the category involved in the applicable activity. (NOTE: A facility may process or otherwise use a toxic chemical in a recycle/reuse operation. To determine whether the facility has processed or used more than an applicable threshold of the chemical, the owner or operator of the facility counts the amount of the chemical added to the recycle/reuse operation during the calendar

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	year. In particular, if the facility starts up such an operation during a calendar year, or in the event that the contents of the whole recycle/reuse operation are replaced in a calendar year, the facility also counts the amount of the chemical placed into the system at these times.) Verify that the following records are kept 3 yrs from the date of the submission of USEPA Form R: – a copy of each report submitted – all supporting materials and documentation used by the person to make the compliance determination that the facility or establishments is a covered facility – documentation supporting the report submitted including: – documentation supporting any determination that a claimed allowable exemption under 40 CFR 372.38 applies – data supporting the determination of whether a threshold applies for each toxic chemical – documentation supporting the calculations of the quantity of each toxic chemical released to the environment or transferred to an off-site location – documentation supporting the use indications and quantity onsite reporting for each toxic chemical, including dates of manufacturing, processing, or use – documentation supporting the basis of estimate used in developing any release or off-site transfer estimates for each toxic chemical – receipts or manifests associated with the transfer of each toxic chemical in waste to offsite locations – documentation supporting reported waste treatment methods, estimates of treatment efficiencies, ranges of influent concentration to such treatment, the sequential nature of treatment steps, if applicable, and the actual operating data, if applicable, to support the waste treatment efficiency estimate for each toxic chemical. Verify that records are maintained at the facility to which the report applies or from which a notification was provided. Verify that, if it has been determined the alternate threshold may be applied, the following records are kept for 3 yr from the date of submission of the required certification statement: – a copy of each certification statement submitted – all supporting materials and documentation used to make the compliance determination that the facility or establishment is

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	eligible to apply the alternate threshold – documentation supporting the certification statement submitted, including: – data supporting the determination of whether the alternate threshold applies for each toxic chemical – documentation supporting the calculation of annual reportable amount, for each toxic chemical, including documentation supporting the calculations and the calculations of each data element combined for the annual reportable amount – receipts or manifests associated with the transfer of each chemical in waste to off-site locations. (NOTE: The following exemptions apply: – if a toxic chemical is present in a mixture of chemicals at a covered facility and the toxic chemical is in a concentration in the mixture which is below 1 percent of the mixture, or 0.1 percent of the mixture in the case of a toxic chemical which is a carcinogen, the quantity of the toxic chemical present in such mixture does not have to be considered when determining whether an applicable threshold has been met or determining the amount of release to be reported under. This exemption applies whether the person received the mixture from another person or the person produced the mixture, either by mixing the chemicals involved or by causing a chemical reaction which resulted in the creation of the toxic chemical in the mixture. However, this exemption applies only to the quantity of the toxic chemical present in the mixture. If the toxic chemical is also manufactured (including imported), processed, or otherwise used at the covered facility other than as part of the mixture or in a mixture at higher concentrations, in excess of an applicable threshold quantity, the facility is required to report – if a toxic chemical is present in an article at a covered facility, the quantity of the toxic chemical present in such article does not have to be considered when determining whether an applicable threshold has been met or determining the amount of release to be reported. This exemption applies whether the facility received the article from another facility or produced the article. However, this exemption applies only to the quantity of the toxic chemical present in the article. If the toxic chemical is manufactured (including imported), processed, or otherwise used at the covered facility other than as part of the article, in excess of an applicable threshold quantity, reporting is required. If a release of a toxic chemical occurs as a result of the processing or use of an item at the facility, that item does not meet the definition of article. – if a toxic chemical is used at a covered facility for one of the

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	following purposes, it is not required to consider the quantity of the toxic chemical used for such purpose when determining whether an applicable threshold has been met under or determining the amount of releases to be reported under . However, this exemption only applies to the quantity of the toxic chemical used for the purpose described in the following list. If the toxic chemical is also manufactured (including imported), processed, or otherwise used at the covered facility other than as listed, in excess of an applicable threshold quantity, reporting is required. The list includes: – use as a structural component of the facility – use of products for routine janitorial or facility grounds maintenance – personal use by employees or other persons at the facility of foods, drugs, cosmetics, or other personal items containing toxic chemicals, including supplies of such products within the facility such as in a facility operated cafeteria, store, or infirmary – use of products containing toxic chemicals for the purpose of maintaining motor vehicles operated by the facility – use of toxic chemicals present in process water and non-contact – cooling water as drawn from the environment or from municipal sources – toxic chemicals present in air used either as compressed air or as part of combustion. – if a toxic chemical is manufactured, processed, or used in a laboratory at a covered facility under the supervision of a technically qualified individual, it is not required to consider the quantity so manufactured, processed, or used when determining whether an applicable threshold has been met or determining the amount of release to be reported.

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FLAMMABLE/ COMBUSTIBLE LIQUIDS STORAGE **HM.35** **General**	(NOTE: The requirements pertaining to the handling, storage, and use of flammable/combustible liquids with a flashpoint below 200 °F outlined through 29 CFR 1910.106 (checklist items HM.35.2 through HM.35.9) do not apply to the following (29 CFR 1910.106(j)): – bulk transportation of flammable/combustible liquids – storage, handling, and use of fuel oil tanks and containers connected with oil burning equipment – storage of flammable and combustible liquids on farms – liquids without a flashpoint that may be flammable under some conditions, such as halogenated hydrocarbons and mixtures containing halogenated hydrocarbons – mists, sprays, or foams, except in flammable aerosols – the following facilities when they meet NFPA Standards: – drycleaning plants – manufacture of organic coatings – solvent extraction plants – stationary combustion engines and gas turbines.)
HM.35.1. Specific MPs should be considered when storing and handling flammable/ combustible materials (MP) **[Revised August 1999].**	Verify that the following MPs are followed: – there are no positive sources of ignition (open flames, welding, radial heat, mechanical sparks) in the immediate area – items are not stored against pipes or coils producing heat – paint drums that are stored horizontally are rolled a half turn every 90 days – containers of paint are palletized prior to storage – incompatible materials are not stored together (see Appendix 3-5) **[Also refer to HM.35.9, 29 CFR 1910.106, for incompatibility issues]** – aerosol containers are stored in well-ventilated areas. Verify that containers are stored and handled such that: – open flame devices are not in use in the storage area – combustible materials, other than wood pallets used in the storage of flammable/combustibles, are not stored in the storage facility – handling is done so as to avoid damaging the label – materials received without a date of manufacture label are marked with the shipping document date – leaking containers are removed from the storage area immediately – containers are stored so that they are issued or used in the order of dates of manufacture, with the material being the oldest used first

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	– there are no open containers – they are grounded.
HM.35.2. Drums and other containers of less than 60 gal individual capacity and portable tanks less than 660 gal individual capacity used to store flammable or combustible materials are required to meet specific standards (29 CFR 1910.106(d)(1) and 1910.106(d)(2)).	Verify that flammable and combustible liquid containers meet the constraints outlined in Appendix 3-2 except that glass or plastic containers of no more than 1 gal capacity may be used for a Class IA or IB flammable liquid if: – the liquid would be rendered unfit for its intended use by contact with metal or would excessively corrode a metal container – the user's process either would require more than 1 pt of a Class IA liquid or more than 1 qt of a Class IB liquid of a single assay lot to be used at one time, or would require the maintenance of an analytical standard liquid of a quality which is not met by the specified standards of the liquids available, and the quantity of the analytical standard liquid required to be used in any one control process exceeds one-sixteenth the capacity of the container allowed under Appendix 3-2 for the class of liquid. Verify that each portable tank has one or more devices installed in the top with sufficient emergency venting capacity to limit internal pressure under fire exposure conditions to 10 psig or 30 percent of the bursting pressure of the tank, whichever is greater. (NOTE: These standards do not apply to: – storage of containers in service stations – Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engine – flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days – beverages when packaged in individual containers not greater than 1 gal.)
HM.35.3. Flammable or combustible liquids shall not be stored in ways that limit the use of exits, stairways, or areas normally used for the safe egress of people (29 CFR 1910.106 (d)(5)(i)).	Verify that exits or common traffic routes are not blocked. (NOTE: These standards do not apply to: – storage of containers in service stations – Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engine – flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days – beverages when packaged in individual containers not greater than 1 gal.)

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HM.35.4. Storage cabinets used for the storage of flammable/ combustible liquids must meet specific requirements (29 CFR 1910.106(d)(3)).	Verify that storage cabinets meet the following: – no more than 60 gal of Class I or Class II liquids nor any more than 120 gal of Class III liquids are stored in the cabinet – the cabinets are fire-resistant – cabinets are conspicuously labeled FLAMMABLE--KEEP FIRE AWAY. (NOTE: The following are definitions of Class I and Class II Liquids: – Class IA are those that have a flashpoint below 73 °F (22.8 °C) and boiling point below 100 °F (37.8 °C) – Class IB are those that have flashpoints below 73 °F (22.8 °C) and boiling points at or above 100 °F (37.8 °C) – Class IC are those that have flashpoints at or above 73 °F (22.8 °C) and below 100°F (37.8 °C) – Class II liquids are those having a flashpoint at or above 100 °F (37.8 °C), and below 140 °F (60 °C) except any mixture having components with flashpoints of 200 °F (93.3 °C) or higher, the volume of which makes up 99 percent or more of the total volume of the mixture.) Verify that metal cabinets are constructed as follows: – the bottom, top, door, and sides are at least number 18 gage sheet iron and double walled with 1.5 in. air space – joints are riveted, welded, or made tight by an equally effective means – the door has a three point lock – the door sill is raised at least 2-in. above the bottom of the cabinet. Verify that wooden cabinets are constructed as follows: – the bottoms, sides, and top are an approved grade of plywood at least 1-in. thick which will not break down or delaminate under fire conditions – all joints are rabbeted and fastened in two directions with flathead wood screws – there is a rabbeted overlap of at least 1 in. if more than one door is used – hinges are mounted so that they will not lose their holding capacity due to loosening or burning out of the screws when subjected to the fire test.

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HM.35.5. Storage cabinets used for the storage of flammable/ combustible liquids should meet specific requirements (MP).	Verify that storage cabinets meet the following: – materials within the cabinet are orderly – there are no open containers within the cabinet.
HM.35.6. Inside flammable/ combustible storage rooms must meet certain specifications (29 CFR 1910.106(d)(4)).	Verify that the facility's flammable/combustible storage facility meets the following: – the walls meet fire resistance test NFPA 251-1969 – a 4 in. raised sill or ramp is provided to adjacent rooms or buildings, or the floor of the storage area is 4 in. lower than the surrounding floors – wooden shelving is at least 1-in. thick – an open grated trench that drains to a safe area is in the building if a sill or ramp is not present – liquid tight wall/ floor joints exist – self-closing fire doors exist (NFPA 80) – the electrical wiring and equipment meet NFPA 70 requirements – the storage in the rooms meet the requirements in Appendix 3-3 – there is either gravity or mechanical exhaust ventilation systems – the exhaust system provides for six changes of air in the room per hour – mechanical exhaust systems are controlled by a switch – for gravity ventilation, the fresh air intake and exhaust outlet are on exterior walls – there is one clear aisle at least 3-ft wide – containers over 30 gal capacity are not stacked one upon the other – dispensing is done by an approved pump or self-closing faucet.
HM.35.7. The storage of flammable or combustible liquids in warehouses or storage buildings shall meet specific requirements (29 CFR 1910.106(d) (5)(vi)).	Verify that the following requirements are met: – if the storage facility is located 50 ft or less from a building or line of adjoining property that may be built upon, the exposing wall is a blank wall having a fire-resistance rating of at least 2 h – any quantity of liquids may be stored as long as the storage arrangements outlined in Appendix 3-4 are met – containers are separated by pallets or dunnage when necessary to provide stability and prevent excess stress on container walls – portable tanks which are stored over one tier high are designed to nest securely – no pile is closer than 3-ft to the nearest beam, chord, girder, or other obstruction – piles are 3-ft below sprinkler deflectors or discharge points of

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	water spray – all wood shelving is at least 1-in. thick – aisles are at least 3-ft wide when necessary for access to doors, windows, or standpipe connections.
HM.35.8. Flammable/ combustible materials stored outside of buildings must meet certain storage and handling criteria (29 CFR 1910.106(d)(6)).	Verify that outdoor flammable/combustible storage meets the following: – no more than 1100 gal of flammable/combustible liquids is stored adjacent to buildings located on the same premises unless 10 ft or more exists between buildings and the nearest flammable container – the storage area is graded to divert spills or is surrounded by a curb at least 6-in. high – when curbs are used there is a provision for draining of accumulated water and the drains terminate in a safe location which are accessible to operate during fire conditions – the storage area is protected against tampering and kept free of waste and other combustible materials – total quantity and arrangement of liquids outside a building complies with the requirements in Appendix 3-4. (NOTE: These standards do not apply to: – storage of containers in service stations – Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engines – flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days – beverages when packaged in individual containers not greater than 1 gal.)
HM.35.9. Areas where flammable/combustibles are stored must meet certain fire protection standards (29 CFR 1910.106(d)(7)) **[Revised August 1999].**	Verify that all flammable/combustible storage locations meet the following: – there is a suitable fire control device at locations where flammable or combustible materials are stored – there is at least one 12-B rated portable fire extinguisher located outside and within 10 ft of a door opening into any room for storage – there is at least one 12-B rated portable fire extinguisher located within 10 to 25 ft of any Class I or Class II liquid storage area outside of a storage room, but inside a building – fire extinguishing sprinklers or systems meet the standards in 29 CFR 1910.159

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	– incompatible materials are not stored together (see Appendix 3-5) – no smoking or open flame is permitted within 50 ft and signs are posted – no water reactive materials are stored in the same room with flammable/ combustible liquids. (NOTE: These standards do not apply to: – storage of containers in service stations – Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engines – flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days.)
HM.35.10. Facilities with personnel exposed to injurious corrosive materials must have emergency use facilities available (29 CFR 1910.151(c)) **[Added July 1999].**	Verify that, where the eyes and body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body are provided within the work area for immediate emergency use.

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FLAMMABLE/ COMBUSTIBLE LIQUIDS STORAGE **HM.40** **Industrial Areas** **HM.40.1.** Areas where flammable/combustible materials are stored, dispensed, or used in industrial plants shall meet specific guide lines (29 CFR 1910.106 (e)(4) through 1910.106(e)(9)).	(NOTE: Checklist items HM.40.1 through HM.40.3 pertain to industrial areas where the use of flammable or combustible liquid is incidental to the principal business or where flammable or combustible liquids are handled or used only in unit physical operations such as drying, evaporating, filtering, distillation, and similar operations which do not involve chemical reactions.) Verify that the following provisions are met: – portable fire extinguishers and fire control equipment shall be in place in quantity and type as needed for the hazards of operation and storage at the site – water is available in a volume and adequate pressure to supply fire protection systems as needed depending on the hazards of the operation, dispensing, and storage – when indicated by special hazards of operation, flammable or combustible liquids processing equipment, major piping, or supporting steel is protected by a water spray system, deluge system, approved fire resistant coatings, insulation, or a combination of these – adequate precautions shall be taken to prevent sources of ignition at the site – Class I liquids shall not be dispensed into containers unless nozzles and containers are electrically interconnected – operations such as welding and cutting for repairs to equipment shall be done under the supervision of an individual in responsible charge – maintenance and operating practices shall control leakage and prevent the accidental escape of flammable or combustible liquids: – adequate aisles shall be maintained – combustible waste material and residues shall be kept to a mini mum, stored in covered metal containers, and disposed of daily – the grounds area around the buildings and unit operating areas shall be kept free of weeds, trash, or other unnecessary combustibles – tank vehicle and tank car loading or unloading facilities are separated from aboveground tanks, warehouses, and other plant buildings or nearest line of adjoining property by a distance of 25 ft for Class I liquids and 15 ft for Class II and III liquids. Verify that plant fire facilities are maintained and periodically inspected and tested to ensure they are in satisfactory working condition.

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HM.40.2. Incidental storage of flammable/ combustible liquids in industrial areas must conform to certain requirements (29 CFR 1910.106(e)(2)).	Verify that flammable and combustible liquids are stored in closed containers.
	
	Verify that the storage areas meet the requirements outlined in 29 CFR 1910.106(d)(3) through 1910.106(d)(4) as listed in checklist items HM.35.4 and HM.35.6 except that:
	
	– the quantity of liquid that can be located outside of an inside storage room or storage cabinet in a building or in any one fire area of a building shall not exceed:
	  – 25 gal of Class IA liquids in containers
	  – 120 gal of Class IB, IC, II, or III liquids in containers
	  – 660 gal of Class IB, IC, II, or III liquids in a single portable tank
	– where large quantities of flammable or combustible liquids are needed, storage may be in tanks.
	
	Verify that areas where flammable/combustible liquids are transferred from one container to another container are separated from other operations in the building by an adequate distance or by construction having fire resistance.
	
	Verify that drainage or other means is provided to contain spills and adequate natural or mechanical ventilation is present.
	
	Verify that the following practices are observed at the point of final use:
	
	– flammable liquids are kept in covered containers when not actually in use
	– where flammable/combustible liquids are used or handled means are provided to dispose of promptly and safely spills and leaks
	– Class I liquids are only used where there are no open flames or other sources of ignition
	– flammable/combustible liquids are drawn from or transferred into vessels, containers, or portable tanks within a building only through a closed piping system, from safety cans, by means of a device drawing through the top, or from a container or portable tanks, by gravity through an approved self closing valve. Transferring by means of air pressure on the container or portable tanks is prohibited.

HM.40.3. Those areas	Verify that the following parameters are met:

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where flammable/ combustible liquids are used in unit operations such as mixing, drying, evaporating, filtering, or distillation are required to meet specific operating standards (29 CFR 1910.106(e)(3)).	– these areas are located so that each building or unit of equipment is accessible from at least one side for fire fighting – areas where unstable liquids are handled or small scale unit chemical processes are carried on shall be separated from the remainder of the area by a fire wall of a 2 h minimum fire resistance rating – emergency drainage systems direct leakage and fire protection water to a safe location – emergency drainage systems, if connected to public sewers or discharged into public waterways, are equipped with traps or a separator – when Class I liquids are being used, ventilation is provided at a rate of not less than 1 $ft^3/min/ft^2$ of solid floor area through either natural or mechanical means – equipment is designed to limit flammable vapor-air mixtures.

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FLAMMABLE/ COMBUSTIBLE LIQUID STORAGE **HM.42** **Tanks**	
HM.42.1. Tanks used for the storage of flammable/ combustible liquids are required to meet specific design and construction standards (29 CFR 1910.106(b)(1)).	Verify that tanks are built of steel unless: – the tank is installed underground – the properties of the liquid being stored requires materials other than steel be used – the tank is designed according to specifications embodying principles recognized as good engineering design for the materials used – it is an unlined concrete tank that stores flammable or combustible liquids having a gravity of 40 degrees American Petroleum Institute (API) or heavier. (NOTE: API gravity is a scale adopted by the American Petroleum Institute for measuring the density of oils.) Verify that tanks located above ground or inside buildings are of noncombustible construction. (NOTE: Tanks designed for underground service not exceeding 2500 gal capacity may be used above ground and low-pressure tanks and pressure vessels may be used as atmospheric tanks.) Verify that atmospheric tanks are not used for the storage of a flammable or combustible liquid at a temperature at or above its boiling point. Verify that the normal operating pressure of a low pressure tank does not exceed the design pressure of the tank.
HM.42.2. Outside aboveground tanks used	Verify that there is a minimum distance of 3 ft between any two

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for the storage of flammable/combustible liquids are required to be installed according to specific parameters (29 CFR 1910.106(b) (2)(i) through 1910.106 (b)(2)(ii)).	tanks. Verify that the distance between any two adjacent tanks is not less than one-sixth the sum of their diameters. (NOTE: When the diameter of one tank is less than half the diameter of the adjacent tank, the distance between the two tanks shall not be less than one-half the diameter of the smaller tank.) Verify that, where unstable flammable or combustible liquids are stored, the distance between the tanks is not less than one-half the sum of their diameters. Verify that, when tanks are compacted in three or more rows or in an irregular pattern, greater spacing or other means is provided for firefighting access. Verify that there is a minimum distance of 20 ft between a liquefied petroleum gas (LPG) container and a flammable or combustible liquid storage tank. (NOTE: In the case of flammable or combustible liquid tanks operating at pressure exceeding 2.5 psig or equipped with emergency venting which will permit pressures to exceed 2.5 psig spacing of 3 ft or the use of the formula concerning one-sixth of diameters may be used.) Verify that means such as diversion curbs or grading are provided to prevent the accumulation of flammable or combustible liquids under adjacent LPG containers. Verify that, if flammable combustible liquid storage tanks are within a diked area, LPG containers are outside the diked area and at least 10 ft away from the centerline of the wall of the diked area. (NOTE: The requirement concerning LPG containers and diked areas does not apply if LPG containers of 125 gal or less capacity are installed adjacent to fuel oil supply of 550 gal or less capacity.)

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HM.42.3. Tanks for the storage of flammable/ combustible liquids are required to meet specific containment requirements (29 CFR 1910.106 (b)(2)(vii)).	Verify that the area surrounding a tank or a group of tanks is either provided with drainage or diked as follows: – drainage systems terminate in vacant land or other area or in an impounding basin having a capacity not smaller than that of the largest tank served – diked areas have a volumetric capacity of not less than the greatest amount of liquid that can be released from the largest tank within the diked area, assuming a fuel tank. Verify that walls of diked areas are of earth, concrete, steel, or solid masonry designed to be liquid tight. Verify that earthen walls 3 ft or more in height have a top that is no less than 2-ft wide. Verify that the walls of the diked area are restricted to an average height of 6 ft above interior grade. Verify that there are no loose combustible materials or empty or full drums or barrels within the diked area.
HM.42.4. In locations where flammable vapors may be present from storage tanks, precautions are required to be taken to prevent ignition (29 CFR 1910.106(b)(6)).	Verify that sources of ignition such as open flames, smoking, welding and cutting, hot surfaces, sparks, and radiant heat are avoided.
HM.42.5. Tanks used for the storage of flammable/ combustible liquids are required to be strength tested before being placed into service (29 CFR 1910.106 (b)(7)).	Verify that the tank has been strength tested. (NOTE: It is common for a tank that has been strength tested to be marked with a American Society of Mechanical Engineers (ASME) code stamp, API monogram, or the label of the Underwriters Laboratory.)

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HM.45 **COMPRESSED GASES STORAGE** **HM.45.1.** The in-plant storage, handling, and utilization of all compressed gases in cylinders, portable tanks, rail tankers, or motor vehicles must be done according to the Compressed Gas Association Pamphlet P-1-1 (29 CFR 1910.101).	Verify that the markings on the container are legible and none removed or defaced. Verify that no part of the cylinder has been modified, tampered with, obstructed, removed, or repaired by the user. Verify that the color of the container is not the only means of identifying the contents of the container Verify that containers are not: – placed anywhere that they might become part of an electrical current – grounded or used for grounding – exposed to temperature extremes – rolled in the horizontal position or dragged. Verify that compressed gas storage areas meet the following: – they are posted NO SMOKING – there is adequate spacing or segregation by partition so that containers are grouped together by the hazard class of the gas – it is designed so that temperatures will not exceed 125 °F (51.7 °C) cylinders are secured to prevent falling Verify that storage areas for flammable compressed gases meet the following: – acetylene containers are stored valve end up (the container may be stored as much as 45 degrees from the vertical) – portable fire extinguishers are available that are either of the CO_2 type or dry chemical type – the area is well ventilated – heat is by indirect means such as steam or hot water. Verify that flammable compressed gas cylinders stored inside a building with other occupancy are kept at least 20 ft from flammable liquids, highly combustible materials, and oxidizers.

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	Verify that, when flammable compressed gases are stored in a separate room without other occupancy: – the walls, partitions, and ceiling are continuous from floor to ceiling and securely anchored – at least one wall is an exterior wall – windows in partitions are wired glass in metal frames with a fixed sash – openings to other parts of the building are protected by a self closing fire door with a resistance of at least 1 h. (NOTE: The most common storage problem is that acetylene (a flammable) and oxygen (an oxidizer) are stored side by side.) (NOTE: Instead of 20 ft, the facility can use a noncombustible barrier at least 5-ft high having a fire resistance rating of at least 1/2 h.) (NOTE: Flammable compressed gases include the following: acetylene; allene; butadiene; butane; 1-butene; 2-butene; 1-chloro-1,1-difluoroethane; chlorotrifluoroethylene; cyclopropane; deuterium; 1,1-difluoroethane; dimethylether; ethane; ethylacetylene; ethylene; hydrogen; liquid hydrogen; isobutane; isobutylene; liquefied petroleum gas; methane; methylacetylene; methyl acetylene-propadiene mix (MAPP); methyl chloride; methyl fluoride; methyl vinyl ether; natural gas; propane; propylene; trifluoroethane; vinyl bromide; vinyl chloride; vinyl fluoride.) (NOTE: Oxidizing gases include the following: compressed air, fluorine, nitrous oxide, liquid nitrous oxide, oxygen, liquid oxygen.)
HM.45.2. Compressed gases should be handled according to specific procedures and practices (MP).	Verify that the following practices and procedures are followed: – oxygen cylinders are free from grease or oil – numbers or markings that are stamped on the cylinders are not altered or defaced – additional markings are not applied to cylinders without approval – empty cylinders are stored separately but in the same manner as full cylinders – valves on empty cylinders are closed – NO SMOKING signs are posted in and around compressed gas storage sheds.

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HM.47 **ACID STORAGE** **HM.47.1.** Bulk storage of acids should meet certain storage and handling criteria (MP).	Verify that bulk acid storage sites meet the following: – buildings are one story in height, preferably of nonflammable construction – there are permanent louvered openings at floor and ceiling levels or other gravity ventilation method – there is safety equipment available and operating (eye wash, deluge shower, self-contained breathing apparatus, protective clothing) – the building is heated to prevent freezing (if applicable) – different acids are stored in separate spaces or noncombustible sealed barriers at least 3-ft high between acids – NO SMOKING signs are posted – automatic sprinkler protection is provided – workers are provided with protective safety equipment and a copious, flowing supply of fresh, clean water for first aid.

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HM.50 **TRANSPORTATION**	(NOTE: The regulations found in Title 49, Subchapter C of the CFR, detail requirements for the transportation of hazardous materials. 49 CFR 171.1(c) stipulates that these requirements apply when materials are being transported in commerce. According to a representative from the Department of Transportation, commerce is defined in terms of making a profit in this instance, therefore Subchapter C does not apply to Federal agencies when Government personnel are transporting hazardous materials in Government vehicles. But, the regulations do apply when transport is occurring in non-Government vehicles.)
HM.50.1. Shipping papers for hazardous materials are required to indicate the proper shipping name, hazard class, identification number, packing group, and quantities of materials (49 CFR 172.202).	Verify that the proper information is displayed on the shipping papers for the hazardous material.

HM.50.2. Each package or container shall be marked in accordance with specific marking requirements (49 CFR 172.301 and 172.302).	Verify that for nonbulk packaging the following markings are on the package:
	
	– proper shipping name and identification number
	– technical names
	– exemption markings
	– consignee's or consignor's name and address except when the package is:
	  – transported by highway only and will not be transferred from one motor vehicle to another
	  – part of a carload lot, truckload lot, or freight container load and the entire contents are shipped from one consignee to one consignor.
	
	Verify that bulk packaging is marked with identification numbers as follows:
	
	– on each side and each end if the packaging has a capacity of 3785 L (1000 gal) or more
	– on two opposing sides if the packaging has a capacity of less then 3785 L (1000 gal)
	– on each side and end of the motor vehicles for cylinders

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	permanently installed on a tube trailer motor vehicle.
HM.50.3. The facility is responsible for providing proper placarding to vehicles transporting hazardous materials off the facility (49 CFR 172.500).	Determine if facility vehicles are used to transport hazardous materials off the facility. Determine if proper DOT placards, as described in 49 CFR 172.504 through 172.558, are affixed to vehicles being used to transport hazardous materials offsite. Determine if transportation has proper DOT placards for vehicles which are being used for transport of hazardous materials. (NOTE: Observe, if practical, the placarding of vehicles used to transport hazardous materials.) (NOTE: See Appendix 3-6 for sample wording of placards.) (NOTE: This requirement does not apply to: – infectious substances – hazardous materials classed as ORM-D – hazardous materials authorized to be offered for transportation as limited quantities when identified as such on shipping papers – hazardous materials which are packaged as small quantities – combustible liquids in nonbulk packaging.)
HM.50.4. The facility should ensure that transportation of hazardous materials between buildings is accomplished in accordance with MPs to help ensure against spills, releases, and accidents (MP).	Determine if procedures exist to manage movement of hazardous materials throughout the facility. Determine if drivers are trained in spill control procedures. Determine if provisions have been made for securing hazardous materials in vehicles when transporting.
HM.50.5. A facility that offers for transport, accepts for transport, transfers, or otherwise handles a hazardous material, must have emergency response information available (49 CFR 172.600 through 172.604).	Verify that emergency response information includes: – the description of the hazardous material required by 49 CFR 172.202-203 – immediate hazards to health – risks of fire or explosion – immediate precautions to take in the event of an accident or incident – immediate methods for handling small or large fires – immediate methods for handling spills or leaks in the absence of fire

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	– preliminary first aid measures. (NOTE: Shipping papers must contain an emergency response telephone number for the hazardous material being shipped.) Verify that each carrier and facility operator maintains this emergency response information.
HM.50.6. Spills, leaks, and other incidents occurring during hazardous material transportation require immediate notification in specific circumstances (49 CFR 171.15) **[May 1997].**	Verify that immediate notification is done for those incidents in which: – as a direct result of hazardous materials: – a person is killed – a person is injured and requires hospitalization – estimated carrier or other property damage exceeds $50,000 – an evacuation of the general public occurs lasting 1 or more hours – one or more major transportation arteries or facilities are closed or shut down for 1 or more hours – the operational flight pattern of an aircraft is altered – fire, breakage, spillage, or suspected radioactive contamination occurs involving shipment of radioactive materials – fire, breakage, spillage, or suspected contamination occurs involving shipment of etiologic agents – the carrier feels the situation merits reporting, even though it does not meet the above requirements – a release of a marine pollutant in excess of 119 gal or 882 lb. Verify that, except for transportation by airplane the immediate notification is given to the DOT by telephone. (NOTE: If the notice involves etiologic agents, it may be given to the Centers for Disease Control and Prevention (CDC).)
HM.50.7. Written hazardous materials incident reports are required to be submitted to the DOT of each hazardous material incident within 30 days of the incident (49 CFR 171.16) **[June 1997].**	Verify that detailed hazardous materials incident reports (DHMIR) are submitted to the DOT within 30 days if: – any of the circumstances of 49 CFR 171.15 are met – there has been an unintentional release of hazardous materials from a package – any quantity of hazardous materials has been discharged during transportation. (NOTE: Guidelines for assistance in completing a DHMIR may be obtained free of charge from the Office of Hazardous Materials Transportation, DHM-51, U.S. Department of Transportation,

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	Washington DC 20590.) Verify that a copy of the report is retained on site for 2 yr (unless written permission has been obtained from the DOT to maintain records elsewhere). (NOTE: This does not apply to incidents involving the unintentional release of a hazardous materials: – transported under one of the following shipping names: Consumer commodity; Battery, electric storage, wet, filled with acid or alkali; paint and paint related material when shipped in a packaging of 5 gal or less – prepared and transported as a limited quantity shipment.)
HM.50.8. Facilities are required to train each of its employees involved in the transportation of hazardous materials according to specific requirements (49 CFR 172.704(a), 172.704(b), 172.704(c)(3), 172.704 (c)(4), 172.704(e), and 173.1(b)).	(NOTE: Training conducted by facilities to comply with the hazard communication programs required by the Occupational Safety and Health Administration (OSHA) of the Department of Labor (29 CFR 1910.120) or the USEPA (40 CFR 311.1) may be used to satisfy these requirements to the extent that the training addresses the requirements.) (NOTE: Relevant training received by the employee from a previous employer or other source may be used to satisfy these requirements, provided a current record of the training is obtained from the employee's previous employer.) Verify that each employee is provided with general awareness/familiarization training designed to do the following: – provide familiarity with the requirements of 49 CFR 171 through 177 – enable each employee to recognize and identify hazardous materials consistent with the hazard communication standards of 49 CFR 171 through 177. Verify that each employee is provided with function-specific training concerning those requirements of 49 CFR 171 through 177 that are specifically applicable to the functions the employee performs. (NOTE: Training related to the requirements of the ICAO Technical Instructions and the IMDG Code may be provided as an alternative to function-specific training on the requirements of 49 CFR 171 through 177 to the extent such training addresses functions authorized by 49 CFR 171.11 and 171.12.)

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	Verify that each employee is provided with function-specific training concerning exemptions issued under 49 CFR 106, 107, and 110 that are specifically applicable to the functions the employee performs. Verify that each employee is provided with safety training concerning the following: – emergency response information – methods and procedures for avoiding accidents, such as the proper procedures for handling packages containing hazardous materials – measures to protect the employee from the hazards associated with hazardous materials to which they may be exposed to in the workplace, including specific measures the employer has implemented to protect employees from exposure. (NOTE: This requirement does not apply to an employee who repairs, modifies, reconditions, or tests packaging as qualified for use in the transportation of hazardous materials, and who does not perform any other function subject to the requirements of 49 CFR 171 through 177.)
HM.50.9. Facility employees that operate motor vehicles transporting hazardous materials must be appropriately trained (49 CFR 177.816(a) and 177.816(c)).	(NOTE: This requirement may be met by compliance with the current requirements for a Commercial Driver's License (CDL) with a tank vehicle or hazardous materials endorsement.) Verify that the motor carrier does not transport (or cause to be transported) a hazardous material unless each hazardous material employee who will operate a motor vehicle has been trained in the following: – the applicable requirements prescribed in 49 CFR 390 through 397 – the procedures necessary for the safe operation of that vehicle. Verify that each driver receives driver training that includes the following subjects: – pretrip safety inspection – use of vehicle controls and equipment, including operation of emergency equipment – procedures for maneuvering tunnels, bridges, and railroad crossings – requirements pertaining to attendance of vehicles, parking, smoking, routing, and incident reports

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	– loading and unloading of materials, including load securement, package handling methods, and compatibility and segregation of cargo in a mixed load
	– operation of the vehicle, including turning, backing, braking, parking, and handling
	– vehicle characteristics, including those that affect vehicle stability, such as the following:
	  – effects of braking and curves
	  – effects of speed on vehicle control
	  – dangers associated with maneuvering through curves
	  – dangers associated with weather or road conditions that a driver may experience
	  – high center of gravity.

HM.50.10. Facility employees that operate cargo tanks or vehicles with portable tanks having a capacity of 1000 gal or more of hazardous materials must be appropriately trained (49 CFR 177.816(b) through 177.816(d)).	(NOTE: This requirement may be met by compliance with the current requirements for a CDL with a tank vehicle or hazardous materials endorsements.)
	
	Verify that each HAZMAT employee who operates a cargo tank or vehicle with a portable tank with a capacity of 1000 gal or more receives training applicable to the requirements of 49 CFR 171 through 177.
	
	Verify that each employee has the appropriate state-issued CDL.
	
	Verify that each employee receives specialized training that includes the following subjects:
	
	– operation of emergency control features of the cargo tank and portable tank
	– retest and inspection requirements for cargo tanks
	– loading and unloading procedures
	– the properties and hazards of the material transported
	– special vehicle handling characteristics, including the following:
	  – high center of gravity
	  – fluid load subject to surge
	  – effects of fluid-load surge on braking
	  – characteristic differences in stability among baffled, unbaffled, and multi-compartmented tanks
	  – effects of partial loads on vehicle stability.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
HM.50.11. Facilities must meet specific requirements regarding training schedules (49 CFR 172.704(c)(1) through 172.704(c)(3)) **[June 1997].**	Verify that training for an employee hired on or before 2 July 1993 is completed prior to 1 October 1993. Verify that training for an employee employed after 2 July 1993 is completed within 90 days after employment. Verify that an employee who changes hazardous materials job functions completes training in the new job function(s) within 90 days after the change. (NOTE: An employee may perform new hazardous materials job functions prior to the completion of training provided that the employee performs those functions under the supervision of a properly trained and knowledgeable employee.) Verify that the employee receives the required training at least once every 3 yr.
HM.50.12. Facilities are required to maintain training records (49 CFR 172.704(d)) **[June 1997].**	Verify that a record of current training, inclusive of the preceding 3 yr, is created and retained by the facility for each employee for as long as that employee is employed by the facility as an employee and for 90 days thereafter. Verify that the record includes the following: – the employee's name – the most recent training completion date of the employee's training – a description, copy, or the location of the training materials used – the name and address of the person providing the training – certification that the employee has been trained and tested.

COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
HM.55 **AMMUNITION STORAGE**	(NOTE: This section applies to the manufacture, keeping, having, storage, sale, transportation, and use of explosives, blasting agents, and pyrotechnics [Added August 1999].) (NOTE: This section does not apply to the sale and use (public display) of pyrotechnics, commonly known as fire works, nor the use of explosives in the form prescribed by the official U.S. Pharmacopeia [Added August 1999].)
HM.55.1. Small arms ammunition is required to be separated from flammable liquids, flammable solids, and oxidizing materials (29 CFR 1910.109(j)(2)) **[June 1997].**	Verify that small arms ammunition is separated from flammable liquids, flammable solids, and from oxidizing materials by a 1 h fire resistant wall or by 25 ft. Verify that small arms ammunition is not stored together with Class A or Class B explosives unless the storage facility is designed for such explosives. (NOTE: No quantity limitations are imposed on the storage of small arms ammunition in warehouses, retail stores, and other general occupancy facilities except those imposed by the limitations the storage facilities.) (NOTE: Small arms ammunition is defined as any shotgun, rifle, pistol, or revolver cartridge, and cartridges for propellant-actuated power devices and industrial guns. Military-type ammunition containing explosive-bursting charges, incendiary, tracer, spotting, or pyrotechnic projectiles is excluded from this definitions (29 CFR 1910.109(a)).
HM.55.2. Facilities with Class A, Class B, Class C explosives, and special industrial explosives, and any newly developed and unclassified explosives must meet magazine requirements (29 CFR 1910.109(c)(1)). **[Added August 1999].**	(NOTE: This section does not apply to:: - stocks of small arms ammunition, propellant-actuated power cartridges, small arms ammunition primers in quantities of less than 750,000 or of smokeless propellant in quantities less than 750 lb - explosive-actuated power devices when in quantities less than 50 lb net weight of explosives - fuse lighter and fuse igniters - safety fuses other than cordeau detonant fuses.) Verify that Class A, Class B, Class C explosives, and special industrial explosives and newly developed and unclassified explosives are kept in magazines meeting the following requirements: –blasting caps, electric blasting caps, detonating primers, and

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	primer cartridges are not stored in the same magazine with other explosives – ground around magazines is sloped away from drainage – land surrounding magazines is kept clear of brush, dried grass, leaves, and other materials for a distance of at least 25 ft. Verify that magazines are either Class I or Class II magazines (see HM.55.5. for physical requirements): - Class I Magazines: required where the quantity of explosives stored is more than 50 lb. - Class II Magazines: required where the quantity of explosives stored is 50 lb or less. Verify that Class I magazines are located away from other magazines in conformity with Appendix 307, Table H-21. Verify that, when used for temporary storage at a site for blasting operations, Class II magazines are located away from other magazines. Verify that a distance of at least 150 ft is maintained between Class II magazines and the work in progress when the quantity of explosives kept is in excess of 25 lb, and at least 50 ft when the quantity of explosives is 25 lb or less. (NOTE: Except as mentioned above, Class II magazine must not be located in conformity with Table H-21, but may be permitted in warehouses and in wholesale and retail establishments when located on a floor which has an entrance at outside grade level and the magazine is located not more than 10 ft from such an entrance. Two Class II magazines may be located in the same building when one is used only for blasting caps in quantities not in excess of 5000 caps and a distance of 10 ft is maintained between magazines.)
HM.55.3. Facilities must construct magazines according to specific requirements (29 CFR 1910.109(c)(2)(ii) **[Added August 1999].**	Verify that magazines for the storage of explosives, other than black powder, Class B and Class C explosives are bullet resistant, weather resistant, fire resistant, and ventilated sufficiently to protect the explosives in the specific location. Verify that magazines used only for the storage of black powder, Class B and Class C explosives are weather resistant, fire resistant, and ventilated. Verify that magazines for the storage of blasting and electric blasting

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	caps are weather resistant, fire resistant, and ventilated.
HM.55.4. Facilities with magazines must meet signage requirements (29 CFR 1910.109(c)(2)(iii)) **[Added August 1999].**	Verify that property upon which Class I magazines are located and property where Class II magazines are located outside of buildings is posted with signs reading EXPLOSIVES - KEEP OFF.
HM.55.5. Facilities must construct Class I magazines according to specific guidelines (29 CFR 1910.109(c)(3)) **[Added August 1999].**	Verify that Class I magazines are masonry construction or of wood or mental construction, or a combination of these types. Verify that masonry units are not less than 8 in. thick. Verify that hollow masonry units used in construction, required to be bullet resistant, have all hollow spaces filled with weak cement or well-tamped sand. Verify that wood construction walls, required to be bullet resistant, have at least a 6-in. space between interior and exterior sheathing and the space between sheathing is filled with well-tamped sand. Verify that metal wall construction, required to be bullet resistant, is lined with brick at least 4-in. thick or has at least a 6-in. sandfill between interior and exterior walls. Verify that, if floor and roofs of masonry magazines are made of wood, floors are tongue and grooved lumber with a nominal thickness of 1 in. Verify that roofs required to be bullet resistant are protected by a sand tray located at the line of eaves and covering the entire area except that necessary for ventilation. Verify that sand in the sand tray is maintained at a depth of not less than 4 in. Verify that all wood at the exterior of magazines, including eaves, are protected by being covered with black or galvanized steel or aluminum metal of thickness of not less than No. 26 gage. Verify that all nails exposed to the interior of magazines are well countersunk. Verify that foundations for magazines are of substantial construction and arranged to provide good cross ventilation.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	Verify that magazines are ventilated sufficiently to prevent dampness and heating of stored explosives. Verify that ventilating openings are screened to prevent the entrance of sparks. Verify that openings to magazines are restricted to that necessary for the placement and removal of stocks of explosives. Verify that doors for openings in magazines for Class A explosives are bullet resistant. (NOTE: Doors for magazines not required to be bullet resistant shall be designed to prevent unauthorized entrance to the magazine.) Verify that provisions are made to prevent the piling of stocks of explosives directly against masonry walls, brick-lined or sand-filled metal walls, and single-thickness metal walls. Verify that provisions above do not interfere with proper ventilation at the interior of side and end walls.
HM.55.6 Facilities must construct Class II magazines according to specific guidelines (29 CFR 1910.109(c)(4)) **[Added August 1999].**	Verify that Class II magazines are made of wood or metal construction, or a combination of wood and metal. Verify that Class II wood magazines have sides, bottom, and cover constructed of 2-in. hardwood boards well braced at corners and protected by being entirely covered with sheet metal of not less than No. 20 gage. Verify that all nails exposed to the interior of the magazine are well countersunk. Verify that Class II metal magazines have sides, bottom, and cover constructed of sheet metal and are lines with 3/8 in. plywood or equivalent. Verify that edges of metal covers overlap sides at least 1 in. Verify that Class II magazine covers for both wood and metal construction have strap hinges and a means for locking. Verify that Class II magazines are painted red and bear lettering in white, on all sides and top, at least 3-in. high EXPLOSIVE - KEEP FIRE AWAY.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	Verify that Class II magazines, when located in a warehouse, and in wholesale and retail establishments have substantial wheels or casters to facilitate easy removal in case of fire. (NOTE: Where necessary, due to climatic conditions, Class II magazines should be ventilated.)
HM.55.7. Facilities must meet proper storage requirements within magazines (29 CFR 1910.109(c)(5)(i) through (iii)) **[Added August 1999].**	Verify that packages of explosives are laid flat with top side up. Verify that black powder, when stored in magazines with other explosives, is stored separately. Verify that black powder stored in kegs is stored on ends, bungs down, or on side, seams down. Verify that corresponding grades and brands are stored together in such a manner that brands and grade marks show. Verify that all stocks are stored so as to be easily counted and checked. Verify that packages of explosives are piled in a stable manner. Verify that, when any kind of explosive is removed from a magazine for use, the oldest explosive of that particular kind is always taken first. Verify that explosives are not unpacked or repacked in a magazine **not** within 50 feet of a magazine or in close proximity to other explosives. Verify that tools used for opening packages of explosives are constructed of nonsparking materials, except that metal slitters may be used for opening fiberboard boxes. Verify that wood wedge and a fiber, rubber, or wood mallet is used for opening or closing wood packages of explosives. Verify that opened packages of explosives are securely closed before being returned to a magazine. Verify that magazines are not used for the storage of any metal tools nor any commodity except explosives. (NOTE: This restriction does not apply to the storage of blasting agents and blasting supplies.)
HM.55.8. Facilities must	Verify that magazine containing explosive materials are opened and

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
inspect magazines at regular intervals (241 FW 4.9(B)(1) through (3)) **[Added August 1999].**	inspected at regular intervals to determine whether there has been an unauthorized entry or attempted entry into the magazine and whether there has been unauthorized removal of the magazines or its contents. Verify that magazine doors are locked, except during the time of placement and removal of stocks of explosives and during inspections. Verify that a copy of the requirements covering the operation of magazines is posted on the magazine door.
HM.55.9. Facilities must meet housekeeping requirements for magazines (29 CFR 1910.109(c)(5)(iv) **[Added August 1999].**	Verify that magazine floors are regulatory swept, kept clean, dry, free of grit, paper, empty used packages, and rubbish. Verify that brooms and other cleaning utensils do not have any spark-producing metal parts. Verify that sweepings from floors of magazines is properly [not defined] disposed of. Verify that magazine floors stained with nitroglycerin is cleaned according to instructions by the manufacturer.
HM.55.10. Facilities must designate responsible personnel for magazines (29 CFR 1910.109(c)(5)(viii)) **[Added August 1999].**	Verify that a competent person is in charge of magazines at all times and is held responsible for the enforcement of all safety precautions.
HM.55.11. Facilities must meet small arms ammunition, small arms primers, and smokeless propellant storage requirements (29 CFR 1910.109(j)) **[Added August 1999].**	(NOTE: This does not apply to in-process storage and intraplant transportation during manufacture of small arms ammunition, small arms primers, and smokeless propellants.) Verify that, for small arms ammunition, no quantity limitation is imposed on the storage in warehouses, retail stores, and other general occupancy facilities except those imposed by limitations of storage facilities. Verify that small arms ammunition is separated from flammable liquids and flammable solids as classified in 49 CFR 172 and from oxidizing materials, by a fire-resistive wall of 1 h rating or by a distance of 25 ft. Verify that small arms ammunition are not stored together with Class A or Class B explosives unless the storage facility is adequate for this latter storage.

COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	Verify that all smokeless propellants are stored in shipping containers specified in 49 CFR 173.93 for smokeless propellants. Verify that commercial stocks of smokeless propellants over 20 lb and not more than 100 lb are stored in portable wooden boxes having walls of at least 1 in. nominal thickness. Verify that commercial stocks of smokeless propellants in quantities of 50 lb or less are stored in nonportable storage cabinets with wooden walls of at least 1 in. nominal thickness. Verify that no more than 400 lb is permitted in any one cabinet. Verify that commercial stocks of smokeless propellants in quantities in excess of 750 lb are stored in magazines in accordance with (c) above. Verify that small arms ammunition primers are not stored except in the original shipping container in accordance with 49 CFR 173.107 for small arms ammunition primers. Verify that small arms ammunition primers are separated from flammable liquids, flammable solids as classified in 49 CFR 172 and oxidizing materials by a fire-resistive wall of 1 h rating or by a distance of 25 ft. Verify that no more than 750,000 small arms ammunition primers are stored in any one building except as provided in (j)(4)(v) above. Verify that no more than 100,000 small arms ammunition primers are stored in any one pile. Verify that piles are at least 15 ft apart. Verify that quantities of small arms ammunition primers in excess of 750,000 are stored in magazines in accordance with (c) above.

Appendix 3-1

Consolidated List of Chemicals Covered in EPCRA

(NOTE: This list is constantly changing and the Federal Register should be consulted for the most up-to-date information.)

This consolidated chemical list includes chemicals subject to reporting requirements under Title III of SARA. This consolidated chemical list does not contain all chemicals that are subject to reporting requirements in Sections 311 and 312 of SARA Title III. These hazardous chemicals, for which MSDSs must be developed under the *Occupational Safety and Health Act,* Hazard Communication Standards, are identified by broad criteria rather than enumeration. There are over 50,000 such substances that meet the criteria. The consolidated list has been prepared to help determine whether there is a need to submit reports under Section 304 or 313 of Title III and, for a specific chemical, what reports need to be submitted.

The list includes chemicals under the four following Federal statutory provisions:

1. SARA Section 302 Extremely Hazardous Substances - the presence of which, in sufficient quantities, requires certain emergency planning activities to be conducted. Releases of these substances are also subject to reporting under Section 304 of Title III. The final rule listing the extremely hazardous substances and their threshold planning quantities (TPQ) is found in 40 CFR 355.
2. CERCLA Hazardous Substances (RQ) Chemicals - releases of which are subject to reporting under the CERCLA or Superfund of 1980. Such releases are also subject to reporting under Section 304 of Title III. CERCLA hazardous substances, and their RQs, are listed in 40 CFR 302, Table 302.4.
3. SARA Section 313 Toxic Chemicals - emissions or releases of which must be reported annually as part of SARA Title III's community right-to-know provisions. A list of these toxic chemicals is found in 40 CFR 372.65.
4. RCRA Hazardous Wastes - from the "P" and "U" lists (40 CFR 261.33) of specific chemicals. RCRA hazardous wastes from the "F" and "K" lists are not included here; such waste streams are also CERCLA hazardous substances. This listing is provided as an indicator that you may already have data on a specific chemical that can be used for Title III reporting purposes.

There are four columns in the consolidated list corresponding to these four statutory provisions. If a chemical is listed as an extremely hazardous substance under Section 302, its TPQ is given in the extremely hazardous substance column. Similarly, the CERCLA RQ is given for those chemicals that are listed as hazardous substances. A key to the symbols used in Section 302 and CERCLA columns precedes the list. An "X" in the column for 40 CFR 372.65(f) indicates that the chemical is subject to reporting under Section 313.

The letter-and-digit code in the column for 40 CFR 261.33 is the chemical's RCRA hazardous waste code. A blank in any of these columns indicates that the chemical is not subject to the corresponding statutory authorities.

The Chemical Abstract Service (CAS) registry number is provided for each chemical on the list.

Key to Symbols in the Consolidated Chemical List

# Indicates that the RQ is subject to change when an assessment of potential carcinogenicity and/or chronic toxicity is completed; until then, the statutory RQ applies.

Indicates that an adjusted RQ has been proposed, but a final judgment has not been made.

+ USEPA has proposed to adjust the RQ for radionuclides by establishing RQs in units of Curies; until then, the 1 lb RQ applies.

* Indicates that the chemical is proposed for deletion from the list of extremely hazardous substances.

** Indicates that no RQ is assigned to this generic or broad class.

(NOTE: These abbreviations are used below: Haz Sub (hazardous substances), Mat (materials).)

CONSOLIDATED CHEMICAL LIST

This is an alphabetical listing of the consolidated list of chemicals. Numbered chemicals are listed first.

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
1,Amino-2-methyl- anthraquinone			x		82-28-0
1-Butanamine,N-butyl- N-nitroso-		10	x	U172	924-16-3
1-Bromo-1-(bromomethyl)-1,3-propanedicarbonitril			x		35691-65-7
1-Chloro-1,1-difluoroethane (HCFC- 142(b)			x		75-68-3
1-Chloro-1,1,2,2-tetrafluoroethane (HCFC-124a)			x		354-25-6
1-Chloro-2,3- epoxypropane		100			106-89-8
1-Methylbutadiene		100		U186	504-60-9
1-Naphthalamine		100	x	U167	134-32-7
1-Propanamine		5000		U194	107-10-8
1-Propanol,2,3- dibromo-phosphate (3:1)		10	x	U235	126-72-7
1-Propene, 1,3-dichloro		100			542-76-6
(1,1'-Biphenyl)- 4,4'diamine, 3,3'dimethoxy-		100	x	U091	119-90-4
(1,1'-Biphenyl)- 4,4'diamine, 3,3'dimethyl-		10	x	U095	119-93-7
1,1-Dichloro-1-fluoro ethane (HCFC-141b)			x		1717-80-6
1,1-Dichloro-1,2,2-trifluoroethane (HCFC- 123b)			x		812-04-4
1,1-Dichloro-1,2,2,3,3-pentafluoropropane (HCFC-225cc)			x		13474-88-9
1,1-Dichloro-1,2,3,3,3-pentafluoropropane (HCFC-225ab)			x		111512-56- 2
1,1-Dichloroethane		1000		U076	75-34-3
1,1-Dichloroethylene		100	x	U078	75-35-4
1,1,-Dimethylhydrazine		10			57-14-7

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
1,1,1-Trichloroethane		1000			71-55-6
1,1,1,2-Tetrachloroet hane			x		630-20-6
1,1,1,2-Tetrachloro-2-fluoroethane (HCFC- 121a)			x		354-11-0
1,1,2-Trichloroethane		100			79-00-5
1,1,2,2-Tetrachloro-1-fluoroethane (HCFC 121)			x		354-14-3
1,1,2,2-Tetrachloroet hane		100			79-34-5
1,2-Benzenedicarboxy lic acid,[bis(2-ethyl hexyl)]ester		100	x	U028	117-81-7
1,2-Benzenedicarboxy lic acid, dibutyl ester		100			54-74-2
1,2-Benzenedicarboxy lic acid, diethyl ester (diethyl phthlate)		5000	x	U088	84-66-2
1,2-Benzenediol,4-[1- hydroxy-2-(methy lamino) ethyl]-		1000		P042	51-43-4
1,2-Benzisothiazolin- 3(2H) one,1,1-diox ide		100	x	U202	81-07-2
1,2-Benzphenanthrene		100		U050	218-01-9
1,2-Butylene oxide			x		106-88-7
1,2-Dibromo-3-chloro propane		1	x	U066	96-12-8
1,2-Dichloro-1,1-diflu oroethane (HCFC- 132b)			x		1649-08-7
1,2-dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225bb)			x		422-44-6
1,2-Dichloro-1,1,2-trif luoroethane (HCFC- 123a)			x		354-23-4
1,2-Dichloro1,1,3,3,3-pentafluoropropane (HCFC-225da)			x		431-86-7
1,2-Dichloroethane		100	x	U077	107-06-2
1,2-Dichloroethylene			x		540-59-0
1,2-Dichloropropane		1000	x	U083	78-87-5
1,2-Dimethylhydrazine		1		U099	540-73-8
1,2-Diphenylhydrazine		10	x	U109	122-66-7
1,2-Epoxybutane		100			106-88-7
1,2-Oxathiolane,2,2- dioxide		10	x	U193	1120-71-4
1,2-Phenylenediamine			x		95-54-5
1,2-Phenylenediamine dihydrochloride			x		615-28-1
1,2-Propylenimie		1			75-55-8
1,2-trans-Dichloroeth ylene		1000		U079	156-60-5
1,2,3-Trichloropropane			x		96-18-4
1,2,4-Trichlorobenzene		100			120-82-1
1,3-Benzenediol		5000		U201	108-46-3
1,3-Benzodioxole, 5- propyl		10		U090	94-58-6
1,3-Benzodioxole,5-)1- 1 propenyl		100	x	U141	120-58-1
1,3-Benzodioxole, 5-) 2,propenyl		100	x	U203	94-59-7
1,3-Butadiene			x		106-99-0
1-(3-Chloroallyl)-3,5,7- triaza-1-azoniaada mantane chloride			x		4080-31-3
1,3-Cyclopentadiene, 1,2,3,4,5,6- hexachloro		1			77-47-4
1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb			x		507-55-1
1,3-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225ea)			x		136013-79- 1
1,3,-Dichloropropene		100			542-75-6

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
1,3-Dichloropropylene		100	x	U084	542-75-6
1,3-Isobenzofurandione		5000	x	U190	85-44-9
1,3-Phenylenediamine			x		108-45-2
1,4-Dichloro-2-butene			x		764-41-0
1,4,-Dichlorobenzene		100			106-46-7
1,4-Diethylene dioxide (1,4-Dioxane)		100	x	U108	123-91-1
1,4-Diethyleneoxide		100			123-91-1
1,4,-Dioxane		100			123-91-1
1,4-Naphthalenedione		5000		U166	130-15-4
1,4-Phenylenediamine dihydrochloride			x		624-18-0
2-Acetylaminofluorene		1	x	U005	53-96-3
2-Aminoanthraquinone			x		117-79-3
2-Bromo-2-nitropro pane-1,3-diol (Bro nopol)			x		52-51-7
2-Butanone peroxide		10		U160	1338-23-4
2-Butanone (Methyl ethyl ketone)		5000	x	U159	78-93-3
2-Butene,1,4-dichloro-		1		U074	764-41-0
2-Chloro-1,1,1-triflu oro-ethane (HCFC 133a)			x		75-88-7
2-Chloro-1,1,2,2-tet rafluoroethane (HCFC 124)			x		2837-89-0
2-Chloroacetophenone			x		532-27-4
2-Chloroethyl vinyl ether		1000		U042	110-75-8
2-Chlorophenol		100		U048	95-57-8
2-Cyclohexl-4,6-dini trophenoll		100		P034	131-89-5
2-Ethoxyethanol		100	x		110-80-5
2-imidazolidinethione		10			96-45-7
2-Mercaptobenzothiaz ole			x		149-30-4
2-Methyl azidine		1			75-55-8
2-Furancarboxaldehyde		5000		U125	98-01-1
2-Methoxyethanol			x		109-86-4
2-Methyllactonitrile			x		75-86-5
2-Methylpyridine			x		109-06-8
2-Naphthylamine		10	x	U168	91-59-8
2-Nitropropane		10	x	U171	79-46-9
2-Phenylphenol			x		90-43-7
2-Picoline		5000		U191	109-06-8
2-propenal		1			106-02-8
2-Propenamide		5000			79-06-1
2-Propenenitrile		100			107-13-1
2-Propenoic acid		5000			79-10-7
2-Propenoic acid, ethyl ester		1000			140-88-5
2-Propenoic acid, 2- methyl-, methyl ester		1000			80-62-6
2,2-Dibromo-3-nitrilo propionamide			x		10222-01-2
2,2-Dichloro-1,1,1-trif luoroethane (HCFC- 123)			x		306-83-2
2,2-Dichloro-1,1,1,3,3-pentafluoropropane (HCFC-225aa)			x		128903-21- 9
2,2-Dichloropropionic acid		5000			75-99-0
2,3,4-Trimethylpentane		1000			540-64-1
2,3-Dichloro-1,1,1,2,3-pentafluoropropane (HCFC-225ba)			x		128903-21- 9
2,3-Dichloropropene		100	x		78-88-6
2,3,4-Trichlorophenol		10	x		15950-66-0
2,3,5-Trichlorophenol		10			933-78-8
2,3,5-Trimethylphenyl			x		2655-15-4

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methylcarbamate					
2,3,6-Trichlorophenol		10			933-75-5
2,3,7,8-Tetrachlorod ibenzo p-dioxin (TCDD)		1			1746-01-6
2,4-D 2-ethyhexyl ester			x		1928-43-4
2,4-D 2-ethyl-4-meth ylpentyl ester			x		53404-37-8
2,4,-D8			x		94-82-6
2,4-D acid		100	x	U240	94-75-7
2,4,-D Butoxyethyl ester			x		1929-73-3
2,4-D Butyl ester			x		94-80-4
2,4-D chlorocrotyl ester					2971-38-2
2,4-D esters		100	x		94-11-1
2,4-D esters		100			94-79-1
2,4-D esters		100			94-80-4
2,4-D esters		100			1320-18-9
2,4-D esters		100			1928-38-7
2,4-D esters		100			2971-38-2
2,4-D esters		100			53467-11-1
2,4-D esters		100			1928-61-6
2,4-D esters		100			1929-73-3
2,4-D esters		100			25168-26-7
2,4-DP			x		120-36-5
2,4-D propylene glycol butyl ether ester			x		1320-18-9
2,4-D sodium salt			x		2702-72-9
2,4-Diaminoanisole sulfate			x		39156-41-7
2,4-Diaminosole			x		615-41-7
2,4-Diaminotoluene		10		U221	823-40-5
2,4-Dichlorophenol		100	x	U081	120-83-2
2,4-Dimethylphenol		100	x	U101	105-67-9
2,4-Dinitrophenol		10	x	P048	51-28-5
2,4-Dinitrotoluene		10			121-14-2
2,4-Dithiobiuret			x		541-53-7
2,4-Toluene diamine		10			95-80-7
2,4-Toluene diisocyan ate		100			91-08-7
2,4,5-T esters		1000			25168-15-4
2,4,5-T salts		1000			13560-99-1
2,4,5-T amines		5000			1319-72-8
2,4,5-T amines		5000			3813-14-7
2,4,5-T amines		5000			6369-96-6
2,4,5-T amines		5000			6369-97-7
2,4,5-T amines		5000			2008-46-0
2,4,5-T esters		1000			93-79-8
2,4,5-T esters		1000			1928-47-8
2,4,5-T esters		1000			2545-59-7
2,4,5-T esters		1000			61792-07-2
2,4,5-T		1000		U232	93-76-5
2,4,5-TP acid esters		100			32534-95-5
2,4,5-Trichlorophenol		10			95-95-4
2,4,6-Trichlorophenol		10			88-06-2
2,4,6-Tribromophenol		100		U408	118-79-6
2,5-Cyclohexadiene- 1,4-dione		10			106-51-4
2,5-Furandione		5000	x	U147	108-31-6
2,6-Dichlorophenol		100		U082	87-65-0
2,6-Dimethylphenol			x		576-26-1
2,6-Xylidine			x		87-62-7
3-Chloro-1,1,1-triflu oro-propane (HCFC- 253fb)			x		460-35-5
3-Chloro-2-methyl-1- propene			x		563-47-3
3-chloroacetophenone		100			532-27-4
3-Chloropropionitrile			x		542-76-7

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3-Iodo-2-propynyl butylcarbamate			x	U375	55406-53-6
3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC-25ca)			x		422-56-0
3,3-Dichlorobenzidine			x		91-94-1
3,3-Dichlorobenzidine dihydrochloride			x		612-83-9
3,3-Dichlorobenzidine sulfate			x		64969-34-2
3.3-Dimethoxybenzi dine		100			119-90-4
3,3-Dimethoxybenzi dine dihydrochloride			x		20325-40-0
3.3-Dimethoxybenzi dine hydrochloride			x		111984-09- 9
3,3-Dimethoxybenzi dine dihydrochloride			x		612-82-8
3,3-Dimethoxybenzi dine dihydrofluoride			x		41756-75-0
3.3.-Dimethylbenzidine		10			119-93-7
3,4-Diaminotoluene		10	x	U221	95-80-7
3,4-Dinitrotoluene		10			610-39-9
3,4,5-Trichlorophenol		10			609-19-8
3,5-Dichloro-N-(1,1- dimethyl-2-propy nyl) benzamide		5000		U192	23950-58-5
4-Aminoazobenzene			x		60-09-3
4-Aminobiphenyl		1	x		92-67-1
4-Chloro-m-cresol		5000		U039	59-50-7
4-Chlorophenyl phenyl ether		5000			7005-72-3
4-Methyl-2-pentanone		5000			108-10-1
4-Nitrobiphenyl		10	x		92-93-3
4-Nitrophenol		100			100-02-7
4,4,-DDE		1			72-55-9
4,4'-Diaminodiphenyl ether			x		101-80-4
4,4'-Isopropylidene diphenol			x		80-05-7
4,4'-Methylene bis(N,N-di-methyl) benzenamine			x		101-61-1
4,4'-Methylenebis(2-chloroaniline)		10			101-14-4
4,4'-Methylenedi aniline		10	x		101-77-9
4,4'-Thiodianiline 6-dinitrophenoll			x		139-65-1
4,6-Dinitro-o-cresol and salts		10			534-52-1
4,7-Methano-1H- Indene, 1,4,5,6,7,8,8- hep tachloro-3a,4,7,7a- tetrahydro		1			57-75-9
4,7-Methano-1H- Indene, 1,2,4,5,6,7,8,8- octachloro-2,3,3a,4,7,7a- hexahydro		5000			57-74-9
5-Nitro-o-anisidine			x		99-59-2
5-Nitro-o-toluidine			x		99-55-6
Abamectin (Avermectin B1)			x		71751-41-2
Acenaphthene		100			83-32-9
Acenaphthylene		5000			208-96-8
Acephate (Acetylphos phoramidothioic acid O,S-dimethyl ester			x		30560-19-1
Acetaldehyde		1000	x	U001	75-07-0
Acetaldehyde, trichloro-		5000		U034	75-87-6
Acetamide		100	x		60-35-5
Acetamide-N-(4-ethox yphenyl)-		100		U187	62-44-2
Acetamide,N-(ami nothi-oxomethyl)-		1000		P002	591-08-2
Acetamide, N-9H-fluo ren-2-yl-		1			53-96-3

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Acetic acid		5000			64-19-7
Acetic acid (2,4-dichlo rophenoxy)- salts and eesters		100			94-75-7
Acetic acid, ethyl ester		5000		U112	141-78-6
Acetic acid, fluoro, sodium salt	10/10,000	10		P058	62-74-8
Acetic acid, lead(2+) salt		10		U144	301-04-2
Acetic acid, thal lium(1+) salt		100		U214	563-68-8
Acetic anhydride		5000			108-24-7
Acetone		5000		U002	67-64-1
Acetone cyanohydrin	1000	10		P069	75-86-5
Acetone thiosemicarba zide	1000/ 10,000				1752-30-3
Acetonitrile		5000	x	U003	75-05-8
Acetophenone		5000	x	U004	98-86-2
Acetyl bromide		5000			506-96-7
Acetyl chloride		5000		U006	75-36-5
Acifluorfen, sodium salt			x		62476-59-9
Acroleîn	500	1	x	P003	107-02-8
Acrylamide	1000/ 10,000	5000	x	U007	79-06-1
Acrylic acid		5000	x	U008	79-10-7
Acrylonitrile	10,000	100	x	U009	107-13-1
Acrylyl chloride	100				814-68-6
Adipic acid		5000			124-04-09
Adiponitrile	1000	1000			111-69-3
Alachlor			x		15972-60-8
Aldicarb	100/10,000	1	x	P070	116-06-3
Aldicarb sulfone		1##		P203	1646-88-4
Aldrin	500/10,000	1	x	P004	309-00-2
d-trans-Allethrin [d- trans-Chrysan themic aacid of d- allethrone0]			x		28057-48-9
Allyl alcohol	1000	100	x	P005	107-18-6
Allyl chloride		1000	x		107-05-1
Allylamine	500	500	x		107-11-9
alpha,alpha-Dimethyl phenethylamine		5000		P046	122-09-8
alpha-Endosulfan		1			959-98-8
alpha-BHC		10			319-84-6
alpha-Hexachlorocy clohexane			x		319-84-6
Aluminum (fume or dust)			x		7429-90-5
Aluminum oxide (fibrous forms)			x		1344-28-1
Aluminum phosphide	500	100	x	P006	20859-73-8
Aluminum sulfate		5000			10043-01-3
Ametryn			x		834-12-8
Aminopterin	500/10,000	500			54-62-6
Amiton	500	500			78-53-5
Amiton oxalate	100/10,000	100			3734-97-2
Amitraz			x		33689-61-1
Amitrole		10	x	U011	61-82-5
Ammonia	500	100	x		7664-41-7
Ammonium acetate		5000			631-61-8
Ammonium benzoate		5000			1863-63-4
Ammonium bicarbon ate		5000			1066-33-7
Ammonium bichromate		10			7789-09-5
Ammonium bifluoride		100			1341-49-7
Ammonium bisulfite		5000			10192-30-0
Ammonium carbamate		5000			1111-78-0
Ammonium carbonate		5000			506-87-6
Ammonium chloride		5000			12125-02-9
Ammonium chromate		10			7788-98-9
Ammonium cit rate,dibasic		5000			3012-65-5
Ammonium fluoborate		5000			13826-83-0

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Ammonium fluoride		100			12125-01-8
Ammonium hydroxide		1000			336-21-6
Ammonium oxalate		5000			5972-73-6
Ammonium oxalate		5000			6009-70-7
Ammonium oxalate		5000			14258-49-2
Ammonium picrate		10		P009	131-74-8
Ammonium silicofluo ride		1000			16919-19-0
Ammonium sulfamate		5000			7773-06-0
Ammonium sulfide		100			12135-76-1
Ammonium sulfite		5000			10196-04-0
Ammonium tartrate		5000			14307-43-8
Ammonium tartrate		5000			3164-29-2
Ammonium thiocyan ate		5000			1762-95-4
Ammonium vanadate		1000		P119	7803-55-6
Amphetamine	1000	1000			300-62-9
Amyl acetate		5000			628-63-7
iso-Amyl acetate		5000			123-92-2
sec-Amyl acetate		5000			626-38-0
tert-Amyl acetate		5000			625-16-1
Analine,2,4,6-trime thyl-	500	500			88-05-1
Anilazine			x		101-05-3
Aniline	1000	5000	x	U012	62-53-3
Anthracene		5000	x		120-12-7
Antimony		5000	x		7440-36-0
Antimony pentachlo ride		1000			7647-18-9
Antimony pentafluoride	500	500			7783-70-2
Antimony potassium tartrate		100			28300-74-5
Antimony tribromide		1000			7789-61-9
Antimony trichloride		1000			10025-91-9
Antimony trifluoride		1000			7783-56-4
Antimony trioxide		1000			1309-64-4
Antimycin A	1000/ 10,000	1000			1397-94-0
ANTU	500/10,000	100			86-88-4
Aroclor 1016		1			12674-11-2
Aroclor 1221		1			11104-28-2
Aroclor 1232		1			11141-16-5
Aroclor 1242		1			53469-21-9
Aroclor 1248		1			12672-29-6
Aroclor 1254		1			11097-69-1
Aroclor 1260		1			11096-82-5
Arsenic		1	x		7440-38-2
Arsenic acid		1		P010	1327-52-2
Arsenic acid		1		P010	7778-39-4
Arsenic disulfide		1			1303-32-8
Arsenic pentoxide	100/10,000	1		P011	1303-28-2
Arsenic trisulfide		1			1303-33-9
Arsenic trioxide	100/10,000	1		P012	1327-53-3
Arsenous oxide	100/10,000	1			1327-53-3
Arsenous trichloride	500	1			7784-34-1
Arsine	100	100			7784-42-1
Arsine, diethyl-		1		P038	692-42-2
Asbestos		1	x		1332-21-4
Atrazine			x		1912-24-9
Azaserine		1		U015	115-02-6
Azinophos-ethyl	100/10,000	100			2642-71-9
Azinophos-methyl	10/10,000	1			86-50-0
Aziridine		1			151-56-4
Aziridine, 2-methyl		1			75-55-8
Barban		1##		U280	101-27-9
Barium and compounds			x		7440-39-3
Barium cyanide		10		P013	542-62-1
Bendiocarb		1##	x	U278	22781-23-3

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Bendiocarb phenol		1##		U364	22961-82-6
Benfluralin			x		1861-40-1
Benomyl		1##	x	U271	17804-35-2
Benzal chloride	500	5000	x	U017	98-87-3
Benzamide			x		55-21-0
Benz[a]anthracene		10		U018	56-55-3
Benzanthracene,7,12- dimethyl-		1		U094	57-97-6
Benz[c]acridine		100		U016	225-51-4
Benzeneamine		5000			63-53-3
Benzenamine,2-methyl		100			95-53-4
Benzenamine,2-methyl 5-nitro-		100		U181	99-55-8
Benzenamine,2- methyl, hydrochlo ride		100	x	U222	636-21-5
Benzenamine,3-(triflu oro-methyl)-	500	500			98-16-8
Benzenamine-4-chloro		1000		P024	106-47-8
Benzenamine,4-chloro- 2-methyl- hydrochlo ride		100		U049	3165-93-3
Benzenenamine, 4- methyl		100		U353	106-49-0
Benzenamine,4-nitro-		5000		P077	100-01-6
Benzenamine 4,4'- methylenebis- 2- chloro		10	x	U158	101-14-4
Benzenamine,NN-dim ethyl-4- phenylazo		10	x	U093	60-11-7
Benzene		10	x	U019	71-43-2
Benzene,1-bromo-4- phenoxy-		100		U030	101-55-3
Benzene,1-(chlorome thyl)-4- nitro-	500/10,000	500			100-14-1
Benzene,1-methyl-2,4- dinitro-		10	x	U105	121-14-2
Benzene,1-methyl ethyl- (Cumene)		5000	x	U055	98-82-8
Bensene, 1,1-(2,2,2- trichloroethylidene) bis(4- methoxy		1			72-43-5
Benzene,1,2-dichloro		100	x	U070	95-50-1
Benzene,1,2,4,5-tetra chloro-		5000		U207	95-94-3
Benzene,1,3-dichloro		100	x	U071	541-73-1
Benzene,1,3-diisocy- anatomethyl		100	x	U223	26471-62-5
Benzene,1,3,5-trinitro-		10		U234	99-35-4
Benzene,1,4-dichloro		100	x	U072	106-46-7
Benzene,2-methyl-1,3- dinitro-		100	x	U106	606-20-2
Benzene, chloro-		100	x	U037	108-90-7
Benzene, chloromethyl-		100			100-44-7
Benzene, dimethyl-		100	x	U239	1330-20-7
Benzene, hexachloro-		10	x	U127	118-74-1
Benzene, hexahydro- (cyclohexane)		1000	x	U056	110-82-7
Bensene, hydroxy		1000			108-95-2
Benzene, m-dimethyl-		1000	x		108-38-3
Benzene, methyl-(tou lene)		1000	x	U220	108-88-3
Benzene, nitro		1000			98-95-3
Benzene, o-dimethyl-		1000	x		95-47-6
Benzene, p-dimethyl-		100	x		106-42-3
Benzene, pentachloro-		10		U183	608-93-5
Benzene, pentachloron itro-		100	x	U185	82-68-8
Benzeneacetic acid, 4- chloro-a- (4-chlo rophenyl)-a- hydroxy-, ethyl ester		10			510-15-6
Benzenediamine, ar- methyl		10			95-80-7
Benzenearsonic acid	10/10,000	10			98-05-5
Benzenesulfonyl chlo ride		100		U020	98-09-9
Benzidine		1	x	U021	92-87-5

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Benzimidazole,4,5- dichloro-2-(trifluo romethyl)	500/10,000	500			3615-21-2
Benz[j]aceanthrylene, 1,2-dihydro-3- methyl-		10		U157	56-49-5
Benzoic acid		5000			65-85-0
Benzo[a]pyrene		1		U022	50-32-8
Benzo[b]fluoranthene		1			205-99-2
Benzo[ghi]perylene		5000			191-24-2
Benzoic acid		5000			65-85-0
Benzo[jk]fluorene		100		U120	206-44-0
Benzo[k]fluoranthene		5000			207-08-9
Benzonitrile		5000			100-47-0
p-Benzoquinone		10			106-51-4
Benzotrichloride	100	10	x	U023	98-07-7
Benzoyl chloride	500	100	x		98-88-4
Benzoyl peroxide			x		94-36-0
Benzyl chloride	500	100	x	P028	100-44-7
Benzyl cyanide	500	500			140-29-4
Beryllium chloride		1			7787-47-5
Beryllium fluoride		1			7787-49-7
Beryllium nitrate		1			13597-99-4
Beryllium nitrate		1			7787-55-5
Beryllium powder		10	x	P015	7440-41-7
beta-Endosyulfan		1			33213-65-9
beta-BHC		1			319-85-7
beta-Chloronaphtha lene		5000		U047	91-58-7
Bicyclo[2.2.1]heptane- 2-carbonitrile, 5- chloro-6-(methyla)	500/10,000	500			15271-41-7
Bifenthrin			x		82657-04-3
Biphenyl		100	x		92-52-4
Bis(2-chloroethoxy) methane		1000	x	U024	111-91-1
Bis(2-chloroisopropyl) ether		1000	x	U027	108-60-1
Bis(2-ethylhexyl)adi pate			x		103-23-1
Bis(chlorome thyl)ketone	10/10,000	10			534-07-6
Bis(tributylin) oxide			x		56-35-9
Bitoscanate	500/10,000	500			4044-65-9
Boron trichloride	500	500	x		10294-34-5
Boron trifluoride com pound with methyl ether (1:1)	1000	1000			353-42-4
Boron trifluoride	500	500	x		7637-07-2
Bromadiolone	100/10,000	100			18772-56-7
Bromacil			x		314-40-9
Bromacil, lithium salt			x		53404-19-6
Bromine	500	500	x		7726-95-6
Bromoacetone		1000		P017	598-31-2
Bromochlorodifluo romethan (Halon 1211)			x		353-59-3
Bromoform		100	x	U225	75-25-2
Bromotrifluorometh- ane (Halon 1301)			x		75-63-8
Bromoxynil			x		1689-84-5
Bromoxynil octanoate			x		1689-88-2
Brucine		100	x	P018	357-57-3
Butanoic acid,4-[bis(2-chloroethyl)amino] benzene-		10		U035	305-03-3
Butyl benzyl Phthalate		100			85-68-7
Butyl acetate		5000			123-86-4
iso-Butyl acetate		5000			110-19-0
sec-Butyl acetate		5000			105-46-4
tert-Butyl acetate		5000			540-88-5
sec-Butyl alcohol			x		78-92-2

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tert-Butyl alcohol			x		75-65-0
sec-Butylamine		1000			13952-84-6
sec-Butylamine		1000			513-49-5
tert-Butylamine		1000			75-64-9
Butyl acrylate			x		141-32-2
Butylamine		1000			109-73-9
iso-Butylamine		1000			78-81-9
Butyraldehyde			x		123-72-8
Butyric acid		5000			107-92-6
iso-Butyric acid		5000			79-31-2
CI Acid Green 3			x		4680-78-8
CI Acid Red 114			x		6459-94-5
CI Basic Green 4			x		569-64-2
CI Basic Red 1			x		989-38-8
CI Direct Black 38			x		1937-37-7
CI Direct Blue 6			x		2602-46-2
CI Direct Blue 218			x		28407-37-6
CI Direct Brown 95			x		16071-86-6
CI Disperse Yellow 3			x		2832-40-8
CI Food Red 15			x		81-88-9
CI Food Red 5			x		3761-53-3
CI Solvent Orange 7			x		3118-97-6
CI Solvent Yellow 14			x		824-07-0
CI Solvent Yellow 34 (Auramine)		100	x	U014	492-80-8
CI Solvent Yellow 3			x		97-56-3
CI Vat Yellow 4			x		128-66-5
Cacodylic acid		1		U136	75-60-5
Cadmium		10	x		7440-43-9
Cadmium acetate		10			543-90-8
Cadmium bromide		10			7789-42-6
Cadmium chloride		10			10108-64-2
Cadmium oxide	100/10,000	100			1306-19-0
Cadmium stearate	1000/ 10,000	1000			2223-93-0
Calcium arsenate	500/10,000	1			7778-44-1
Calcium arsenite		1			52740-16-6
Calcium carbide		10			75-20-7
Calcium chromate		10		U032	13765-19-0
Calcium cyanamide		1000	x		156-62-7
Calcium cyanide		10		P021	592-01-8
Calcium dodecylben zene sulfonate		1000			26264-06-2
Calcium hypochlorite		10			7778-54-3
Camphechlor	500/10,000	1			8001-35-2
Cantharidin	100/10,000	100			56-25-7
Caprolactam		5000			105-60-2
Captan		10	x		133-06-2
Carbachol chloride	500/10,000	500			51-83-2
Carbamic acid, ethyl ester		100	x	U238	51-79-6
Carbamic acid, methyl- nitroso- ,ethyl ester		1		U178	615-53-2
Carbamic acid, methyl- o- (((2,4- dimethyl- 1,3 dithiolan-2-y	100/10,000	1##		P185	26419-73-8
Carbamic chloride, dimethyl-		1	x	U097	79-44-7
Carbaryl		100	x		63-25-2
Carbendazim		1##		U372	10605-21-7
Carbofuran	10/10,000	10	x		1563-66-2
Carbofuran phenol		1##		U367	1563-38-8
Carbon disulfide	10,000	100	x	P022	75-15-0
Carbon oxyfluoride		1000		U033	353-50-4
Carbon tetrachloride		10	x	U211	56-23-5
Carbonic dichoride		10			75-44-5
Carbonyl sulfide		100	x		463-58-1

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Carbophenothion	500	500			786-19-6
Carbosulfan		1##		P189	55285-14-8
Carboxin			x		5234-68-4
Catechol		100	x		120-80-9
Chinomethionat			x		2349-01-2
Chloramben		100	x		133-90-4
Chlordane	1000	1	x	U036	57-74-9
Chlorendic acid			x		115-28-6
Chlorfenvinfos	500	500			470-90-6
Chlorinuron ethyl			x		90982-32-4
Chlorinated camphene		1			8001-35-2
Chlorinated fluorocar bon(Freon 113)			x		76-13-1
Chlorine	100	10	x		7782-50-5
Chlorine cyanide		10		P033	506-77-4
Chlorine dioxide			x		10049-04-4
Chlormephos	500	500			24934-91-6
Chlormequat chloride	100/10,000	100			999-81-5
Chlornaphazine		100		U026	494-03-1
Chloroacetaldehyde		1000	P023		107-20-0
Chloroacetic acid	100/10,000	100	x		79-11-8
Chlorobenzene		100			108-90-7
Chlorobenzilate		10	x	U038	510-15-6
Chlorodibromomethane		100			124-48-1
Chlorodifluoromethane (HCFC-22)			x		75-45-6
Chloroethane		100	x		75-00-3
Chloroethanol	500	500			107-07-3
Chloroethyl chlorofor mate	1000	1000			627-11-2
Chloroform	10,000	10	x	U044	67-66-3
Chloromethane		100			74-87-3
Chloromethyl ether	100	10			542-88-1
Chloromethyl methyl ether	100	10	x	U046	107-30-2
Chlorophacinone	100/10,000	100			3691-35-8
Chloropicrin			x		76-06-2
Chloroprene		100	x		126-99-8
Chlorotetrafluoroethane			x		63938-10-3
Chlorothalonil			x		1897-45-6
Chlorortrifluo romethane (CFC 13)			x		75-72-9
Chloroxuron	500/10,000	500			1982-47-4
Chlorpyrifos		1			2921-88-2
Chlorpyrifos methyl			x		5598-72-3
Chlorsulfonic acid		1000			7790-94-5
Chlorsulfuron			x		64902-72-3
Chlorthiophos	500	500			21923-23-9
Chromic acetate		1000			1066-30-4
Chromic acid		10			11115-74-5
Chromic acid		10			7738-94-5
Chromic chloride	1/10,000	1			10025-73-7
Chromic sulfate		1000			10101-53-8
Chromium		5000	x		7440-47-3
Chromous chloride		1000			10049-05-5
Cobalt			x		7440-50-8
Cobalt,((2,2'-1,2- ethanediylbis (ni-trilomethyli dyne))bis(6)	100/10,000	100			62207-76-5
Cobalt carbonyl	10/10,000	10			10210-68-1
Cobaltous bromide		1000			7789-43-7
Cobaltous formate		1000			544-18-3
Cobaltous sulfamate		1000			14017-41-5
Colchicine	10/10,000	10			64-86-8
Copper		5000	x		7440-50-8
Copper cyanide		10		P029	544-92-3

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Coumaphos	100/10,000	10			56-72-4
Coumatetralyl	500/10,000	500			5836-29-3
Cresol(s) (mixed iso mers)		100	x	U052	1319-77-3
m-Cresol		100	x	U052	108-39-4
o-Cresol	1000/ 10,000	100	x	U052	95-48-7
p-Cresol		100	x	U052	106-44-5
Creosote		1	x	U051	8001-58-9
Cresylic acid (isomers and mixtures)		100			1319-77-3
m-Cresylic acid		100			108-39-4
o-Cresylic acid		100			95-48-7
p-Cresylic acid		100			106-44-5
Crimidine	100/10,000	100			535-89-7
Crotonaldehyde,(E)-	1000	100		U053	123-73-9
Crotonaldehyde	1000	100	x	U053	4170-30-3
Cumene		5000			98-82-8
Cumene hyroperoxide			x		80-15-9
Cupferron			x		135-20-6
Cupric acetate		100			142-71-2
Cupric chloride		10			7447-39-4
Cupric nitrate		100			3251-23-8
Cupric oxalate		100			5893-66-3
Cupric sulfate		10			7758-98-7
Cupric sulfate ammoni ated		100			10380-29-7
Cupric tartrate		100			815-82-7
Cyanazine			x		21725-46-2
Cyanides (soluble cya nide salts		10		P030	57-12-5
Cyanogen		100		P031	460-19-5
Cyanogen bromide	500/10,000	1000		U246	506-68-3
Cyanogen iodide	1000/ 10,000	1000			506-78-5
Cyanophos	1000	1000			2636-26-2
Cyanuric fluoride	100	100			675-14-9
Cycloate			x	U386	1134-23-2
Cyclohexane, 1,2,3,4,5,6-hexachloro-,		1			58-89-9
Cyclohexanol			x		108-93-0
Cyclohexanone		5000		U057	108-94-1
Cycloheximide	100/10,000	100			66-81-9
Cyclohexylamine	10,000	10,000			108-91-8
Cyclophosphamide		10		U058	50-18-0
Cyfluthrin			x		68359-37-5
Cyhalothrin			x		68085-85-8
D-Glucopyranose,2- deoxy-2-(3-methyl- 3-ni-trosoureido)-		1		U206	18883-66-4
Daunomycin		10		U059	20830-81-3
Dazomet			x	U366	533-74-4
Dazomet, sodium salt			x		53404-60-7
DDD		1		U060	72-54-8
DDE	5000	1			72-55-9
DDT		1		U061	50-29-3
Decaborane(14)	500/10,000	500			17702-41-9
Decabromodiphenyl oxide			x		1163-19-5
DEHP		100			117-81-7
Delta-BHC		1			319-86-8
Demeton	500	500			8065-48-3
Demeton-S-methyl	500	500			919-86-8
Desmmedipham			x		13684-56-5
Di-(2-ethylhexyl)phth late (DEHP)			x		177-81-7
Di-n-butyl phthalate		10			84-74-2
Di-n-octyl phthalate		5000	x	U107	117-84-0
Di-n-propylnitro samine(N-Nitrosodi- n-propylamine)		10	x	U111	621-64-7

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Dialifor	100/10,000	100			10311-84-9
Diallate		100	x	U062	2303-16-4
Diaminotoluene (mixed isomers)		10	x	U221	25376-45-8
Diaminotoluene(mixed isomers)		10			496-72-0
Diazinon		1	x		333-41-5
Diazomethane		100	x		334-88-3
Dibenz(a)Ipyrene		10		U064	189-55-9
Dibenz[a,h] anthracene		1		U063	53-70-3
Dibenzofuran		100	x		132-64-9
Diborane	100	100			19287-45-7
Dibromotetrafluor- ethane (Halon 2402			x		124-73-2
Dibutyl phthalate		10	x	U069	84-74-2
Dicamba		1000	x		1918-00-9
Dichlone		1			117-80-6
Dichloran			x		99-30-9
Dichloro-1,1,2-trifluo roethane			x		90454-18-5
Dichlorobenzene (mixed isomers)		100	x		25321-22-6
p-Dichlorobenzene		100			106-46-7
Dichlorobromomethane		5000	x		75-27-4
Dichlorodifluo romethane(CFC-12)		5000	x	U075	75-71-8
Dichloroethyl ether	10,000	10	x	U025	111-44-4
Dichlorofluoromethane (HCFC-21)			x		75-43-4
Dichloromethane		1000			75-02-2
Dichloromethyl ether	100	10	x	P016	542-88-1
Dichloromethyl- phe nylsilane	1000	1000			149-74-6
Dichloropentafluoro propane			x		127564-92- 5
Dichlorophene			x		97-23-4
Dichloropropane		1000			26638-19-7
Dichloropropane-		100			8003-19-8
Dichloropropene		100			26952-23-8
Dichlorotetrafluoro- ethane (CFC-114)			x		76-14-2
Dichlorotrifluoroethane			x		34077-87-7
Dichlorvos	1000	10	x		62-73-7
Dicholobenil		100			1194-65-6
Dicofol			x		115-32-2
Dicrotophos	100	100			141-66-2
Dicyclofop methyl			x		51338-27-3
Dicyclopenbtadiene			x		
Dieldrin		1		P037	60-57-1
Diepoxybutane	500	10	x	U085	1464-53-5
Diethanolamine		100	x		111-42-2
Diethatyl ethyl			x		38727-55-8
Diethyl chlorophos phate	500	500			814-49-3
Diethyl-p-nitrophe nylphosphate		100		P041	311-45-5
Diethyl sulfate		10	x		64-67-5
Diethylamine		100			109-89-7
N,N-Diethylaniline		1000			91-66-7
Diethylcarbamazine citrate	100/10,000				1642-54-2
Diethylhexylphthalate		100			
Diethylene glycol, dicarbamate		1##		U395	5952-26-1
Diethylstilbestrol		1		U089	56-53-1
Diflubenzuron			x		35367-38-5
Digitoxin	100/10,000	1000			71-63-6
Diglycidyl ether	1000	1000			2238-07-5
Diglycidyl resorcinol ether			x		101-90-6
Digoxin	10/10,000	10			20830-75-5
Dihydrosafrole			x		94-58-6
Diisopropylfluorophos phate	100	100		P043	55-91-4
Dimefox	500	599			115-26-4

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Dimethipin			x		55290-64-7
Dimethoate	500/10,000	10	x	P044	60-51-5
Dimethyl aminoa zobenzene		10			60-11-7
Dimethyl chlorothio phosphate			x		2524-03-0
Dimethyl-p-phenyl- enediamine	10/10,000				99-98-9
Dimethyl phosphoro-chloridothioate	500	500			2524-03-0
Dimethyl phthalate		5000	x	U102	131-11-3
Dimethyl sulfate	500	100	x	U103	77-78-1
Dimethylamine		1000	x	U092	124-40-3
Dimethylamine dicamba			x		2330-66-5
N,N-Dimethylaniline		100			121-69-7
Dimethylcarbamoyl chloride		1			79-44-7
Dimethyldichlorosilane	500	500	x		75-78-5
Dimethylformamide		100			68-12-2
Dimethylhydrazine	1000	10	x	U098	57-14-7
Dimetilan	500/10,000	1		P191	644-64-4
Dinitrobenzene (mixed)		100			25154-54-5
Dinitrocresol	10/10,000	10			534-52-1
Dinitrophenol		10			25550-58-7
Dinitrotoulene	10/10,000	10	x	P047	534-52-1
Dinitrotoluene (mixed isomers)		10	x		25321-14-6
Dinocap			x		39300-45-3
Dinoseb	100/10,000	1000	x	P020	88-85-7
Dinoterb	500/10,000	500			1420-07-1
Dioxathion	500	500			78-34-2
Diphacinone	10/10,000	10			82-66-6
Diphenamid			x		957-51-7
Diphenylamine			x		122-39-4
Diphosphoramide, octamethyl-	100	100		P085	152-16-9
Dipotassium enfothal			x		2164-07-0
Dipropyl isocinchomer onate			x		136-45-8
Dipropylamine		5000		U110	142-84-7
Diquat		1000			85-00-7
Diquat		1000			2764-72-9
Disodium cyanodithio imidocarbonate			x		138-93-2
Disulfoton	500	1		P039	298-04-4
Dithiazinine iodide	500/10,000	500			514-73-8
Dithiobiuret	100/10,000	100		P049	541-53-7
Diuron		100	x		330-54-1
Dodecylbenzene sulfonic acid		1000			27176-87-0
Dodine			x		2439-10-3
Emetine,dihyrochloride	1/10,000	1			316-42-7
Endosulfan	10/10,000	1		P050	115-29-7
Endosulfan sulfate		1			1031-07-8
Endothall		1000		P088	145-73-3
Endothion	500/10,000	500			2778-04-3
Endrin	500/10,000	1		P051	72-20-8
Endrin aldehyde		1			7421-93-4
Epichlorohydrin	1000	100	x	U041	106-89-8
EPN	100/10,000	100			2104-64-5
Ergocalciferol	1000/ 10,000	1000			50-14-6
Ergotamine tartrate	500/10,000	500			379-79-3
Ethanal		1000			75-07-0
Ethanamine,N-ethyl-N- nitroso-		1	x	U174	55-18-5
Ethanimidothioci acid		1##		U394	30558-43-1
Ethane, 1,1-dichloro		1000			75-34-3
Ethane,1,1'-oxybis-		100		U117	60-29-7
Ethane,1,1'-oxybis(2- chloro-		10			111-44-4
Ethane, 1,1,1-trichloro		1000			71-55-6
Ethane,1,2-dibromo-		1	x	U067	106-93-4

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Ethane, 11,2-dichloro		100			107-06-2
Ethane,1,1,2-trichloro		100	x	U227	79-00-5
Ethane,1,1,1,2-tetra chloro-		100		U208	630-20-6
Ethane,1,1,2,2-tetra chloro-		100	x	U209	79-34-5
Ethane, hexachloro		100	x	U131	67-72-1
Ethanesulfonyl chlo ride, 2-chloro-	500	500			1622-32-8
Ethanethioamide		10	x	U218	62-55-5
Ethanol,1,2-dichloro- acetate	1000	1000			10140-87-1
Ethanol,2,2'-(nitroso imino) bis-		1		U173	1116-54-7
Ethanone, 1-phenyl		5000			98-86-2
Ethene, 1,1-dichloro		100			75-35-4
Ethene, chloro-		1	x	U043	75-01-4
Ethene, tetrachloro		100	x	U210	127-18-4
Ethene, trichloro		100			79-01-6
Ethion	1000	10			563-12-2
Ethoprophos	1000	1000	x		13194-48-4
Ethyl acrylate		1000	x	U113	140-88-5
Ethyl carbamate		100			51-79-6
Ethyl chloride		100			75-00-3
Ethyl chloroformate			x		541-41-3
Ethyl dipropylthiocar bamate (EPTC)			x	U390	759-94-4
Ethyl methacrylate		1000		U118	97-63-2
Ethyl methanesulfonate		1		U119	62-50-0
Ethylbenzene		1000	x		100-41-4
Ethylbis(2-chloroet hyl)amine	500	500			538-07-8
Ethylene			x		74-85-1
Ethylene dibromide		1			106-93-4
Ethylene dichloride		100			107-06-2
Ethylene Fluorohydrin	10	10			371-62-0
Ethylene glycol		5000	x		107-21-1
Ethylene oxide	1000	10	x	U115	75-21-8
Ethylene thiourea		10	x	U116	96-45-7
Ethylenebisdithiocar bamic- acid, salts & esters/		5000		U114	111-54-6
Ethylenediamine	10,000	5000			107-15-3
Ethylenediamine tetra- acetic acid (EDTA)		5000			60-00-4
Ethyleneimine	500	1	x	P054	151-56-4
Ethylenethiocyanate	10,000	10,000			542-90-5
Ethylidene dichloride		1000	x		75-34-3
Famphur		1000	x	P097	52-85-7
Fenamiphos	10/10,000	10			22224-92-6
Fenarimol			x		60100-88-9
Fenbutatin oxide			x		13356-08-6
Fenitrothion	500				122-14-5
Fenoxaprop ethyl			x		66441-23-4
Fenoxycarb			x		72490-01-8
Fenpropathrin			x		39515-41-8
Fensulfothion	500	500			115-90-2
Fenthion					55-38-9
Fenvalerate			x		51630-58-1
Ferbam			x	U396	14484--64- 1
Ferric ammonium cit rate		1000			1185-57-5
Ferric ammonium oxalate		1000			2944-67-4
Ferric ammonium oxalate		1000			55488-87-4
Ferric chloride		1000			7705-08-0
Ferric fluoride		100			7783-50-8
Ferric nitrate		1000			10421-48-4
Ferric sulfate		1000			10028-22-5
Ferrous ammonium sul fate		1000			10045-89-3

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Ferrous chloride		100			7758-94-3
Ferrous sulfate		1000			7720-78-7
Ferrous sulfate		1000			7782-63-0
Florouracil	500/10,000				51-21-8
Fuazifop-butyl			x		69806-50-4
Fluenetil	100/10,000	100			4301-50-2
Fluometuron			x		2164-17-2
Fluorene		5000			86-73-7
Fluorine	500	10	x	P056	7782-41-4
Fluoroacetamide	100/10,000	100		P057	640-19-7
Fluoroacetic acid	10/10,000	10			144-49-0
Fluoroacetyl chloride	10	10			359-06-8
Fluorouracil	500/10,000	100	x		51-21-8
Fluvalinate			x		69409-94-5
Folpet			x		133-07-3
Fomesafen			x		72178-02-0
Fonofos	500	500			944-22-9
Formaldehyde	500	100	x	U122	50-00-0
Formaldehyde cyano hydrin	1000	1000			107-16-4
Formetanate hydro chloride	500/10,000	1##		P198	23422-53-9
Formic acid		5000	x	U123	64-18-6
Formothion	100	100			2540-82-1
Formparanate	100/10,000	1##		P197	17702-57-7
Fosthietan	500	500			21548-32-3
Fuberidazole	100/10,000	100			3878-19-1
Fulminic acid, mercu ry(II) salt		10		P065	628-86-4
Fumaric acid		5000			110-17-8
Furan	500	100		U124	110-00-9
Furan, tetrahydro-		1000		U213	109-99-9
Gallium trichloride	500/10,000	500			13450-90-3
Glycidylaldehyde		10		U126	765-33-4
Guanidine,N-nitroso-N methyl-N'-nitro		10		U163	70-25-7
Heptachlor		1	x	P059	76-44-8
Heptachlor epoxide		1			1024-57-3
Hexachloro-1,3-butadi ene		1	x	U128	87-68-3
Hexachlorobenzene		10			118-74-1
Hexachlorobutadiene		1			87-68-3
Hexachlorocyclohex ane		1			58-89-9
Hexachlorocyclopenta diene	100	10	x	U130	77-47-4
Hexachloroethane		100			67-72-1
Hexachloronaphthalene			x		1335-87-1
Hexachlorophene		100	x	U132	70-30-4
Hexachloropropene		1000		U234	1888-71-7
Hexaethyl tetraphos phate		100		P062	757-58-4
Hexamethyleme-1,6- diisocyante		100			822-06-0
Hexamethylenedi amine, N,N'-dibutyl-	500				4835-11-4
Hexamethylphosphora mide		1	x		680-31-9
Hexane		5000	x		110-54-3
Hexazinone			x		51235-04-2
Hexone		5000			108-10-1
Hydramethylnon			x		67485-29-4
Hydrazine	1000	1	x	U133	302-01-2
Hydrazine, 11,1-dime thyl-		10			57-14-7
Hydrazine, 1,2-diphe nyl-		10			122-66-7
Hydrazine. methy;		10			60-34-4
Hydrazine sulfate			x		10034-93-2
Hydrochloric acid		5000			7647-01-0
Hydrogen chloride (gas only)	1000	500	x		7647-01-0
Hydrocyanic acid	100	10	x	P063	74-90-8
Hydrofluoric acid		100			7664-39-3

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Hydrogen fluoride	100	100	x	U134	7664-39-3
Hydrogen perioxide (conc > 52%)	1000	1000			7722-84-1
Hydrogen phosphide		100			7803-51-2
Hydrogen selenide	10	10			7783-07-5
Hydrogen sulfide	500	100		U135	7783-06-4
Hydroquinone	500/10,000	100	x		123-31-9
Isomethane		100			74-88-4
Imazalil			x		35554-44-0
Indeno(1,2,3-cd)pyrene		100		U137	193-39-5
Iron, pentacarbonyl-	100	100	x		13463-40- 06
Isobenzan	100/10,000	100			297-78-9
Isobutyl alcohol		5000		U140	78-83-1
Isobutyraldehyde			x		78-84-2
Isobutyronitrile	1000	1000			78-82-0
Isocyanic acid,3,4-dichlorophenyl ester	500/10,000	500			102-36-3
Isodrin	100/10,000	1	x	P060	465-73-6
Isofenphos			x		25311-71-1
Isoflurophate	100	100			56-91-4
Isophorone		5000			78-59-1
Isophorone diisocyan ate	100	100			4098-71-9
Isoprene		100			78-79-5
Isopropanolamine dode-cyclbenzene sulfonate		1000			42504-46-1
Isopropyl alcohol (mfg- strong acid processes)			x		67-63-0
Isopropyl chlorofor mate	1000	1000			108-23-6
Isopropylmethylpyra zolyl dimethylcar bamate	500	1##		P192	119-38-0
Kepone		1		U142	143-50-0
Lactofen			x		77501-63-4
Lactonitrile	1000	1000			78-97-7
Lasiocarpine		10		U143	303-34-4
Lead		10	x		7439-92-1
Lead arsenate		1			10102-48-4
Lead arsenate		1			7645-25-2
Lead arsenate		1			7784-40-9
Lead chloride		10			7758-95-4
Lead fluoborate		10			13814-96-5
Lead fluoride		10			7783-46-2
Lead iodide		10			10101-63-0
Lead nitrate		10			10099-74-8
Lead phosphate		10		U145	7446-27-7
Lead stearate		10			1072-35-1
Lead stearate		10			52652-59-2
Lead stearate		10			7428-48-0
Lead stearate		10			56189-09-4
Lead subacetate		10		U146	1335-32-6
Lead sulfate		10			15739-80-7
Lead sulfate		10			7446-14-2
Lead sulfide		10			1314-87-0
Lead thiocyanate		10			592-87-0
Leptophos	500/10,000	500			21609-90-5
Lewisite	10	10			541-25-3
Lindane	1000/ 10,000	1	x	U129	58-89-9
Linuron			x		330-55-2
Lithium carbonate			x		554-13-2
Lithium chromate		10			14307-35-8
Lithium hydride	100	100			7580-67-8
m-Nitrophenol		100			554-84-7
m-Nitrotoluene		1000			99-08-1

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Malathion		100	x		121-75-5
Maleic acid		5000			110-16-7
Maleic anhydride		5000			108-31-6
Maleic, hydrazide		5000		U148	123-33-1
Malononitrile	500/10,000	1000	x	U149	109-77-3
Maneb			x		12427-38-2
Manganese			x		7439-96-5
Manganese dimeth yldithiocarbamate		1##		P196	15339-36-3
Manganese, tricarbo nyl methylcyclopen tadienyl	100	100			12108-13-3
MDI		5000			101-68-8
Mechlorethamine	10	10	x		51-75-2
Mecoprop			x		93-65-2
MEK		5000			78-93-3
Melphalan		1		U150	148-82-3
Mephosfolan	500	500			950-10-7
Mercuric acetate	500/10,000	500			1600-27-7
Mercuric chloride	500/10,000	500			7487-94-7
Mercuric cyanide		1			592-04-1
Mercuric nitrate		10			10045-94-0
Mercuric oxide	500/10,000	500			21908-53-2
Mercuric sulfate		10			7783-35-9
Mercuric thiocyanate		10			592-85-8
Mercurous nitrate		10			7782-86-7
Mercurous nitrate		10			10415-75-5
Mercury		1	x	U151	7439-97-6
Merphos			x		150-50-5
Methacrolein diacetate	1000	1000			10476-95-6
Methacrylic anhydride	500	500			760-93-0
Methacryloyl chloride	100	100			920-46-7
Methacryloyloxyethyl isocyanate	100	100			30674-80-7
Methacrylonitrile	500	1000	x	U152	126-98-7
Metham sodium		1##	x	U384	137-42-8
Methamidophos	100/10,000	100			10265-92-6
Methanamine, N- methyl-N-nitro		10			62-75-9
Methane, bromo		1000			74-83-9
Methane, chloro		100	x	U045	74-87-3
Methane, chlo romethoxy		10			107-30-2
Methane, dibromo-		1000	x	U068	74-95-3
Methane, dichloro-		1000	x	U080	75-09-2
Methaneiodd		100	x	U138	74-88-4
Methane, oxybis(chloro		10			542-88-1
Methane, tetrachloro		10			58-23-5
Methane, tribromo		100			75-25-2
Methane, trichloro		10			67-66-3
Methane, trichloroflu oro- (CFC-11)		5000		U121	75-69-4
Methanesulfanyl chlo ride, trichloro	500	100	x	P118	594-42-3
Methanesulfonyl fluo ride	1000	1000			558-25-8
Methanol		5000	x	U154	67-56-1
Methapyrilene		5000		U155	91-80-5
Methazole			x		20354-26-1
Methidathion	500/10,000	500			950-37-8
Methiocarb	500/10,000	10	x		2032-65-7
Methomyl	500/10,000	100		P066	16752-77-5
Methoxone			x		94-74-6
Methoxone sodium salt			x		3653-48-3
Methoxychlor		1	x		72-43-5
Methoxyethylmercuri cacetate	500/10,000	500			151-38-2
Methyl 2-chloroacry late	500	500			80-63-7

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Methyl acrylate			x		96-33-3
Methyl alcohol		5000			67-56-1
Methyl bromide	1000	1000	x	U029	74-83-9
Methyl Chloride		100			74-87-3
Methyl chlorocarbonate			x		79-22-1
Methyl chlorofor mate(Methylchloro carbonate)	500	1000		U156	79-22-1
Methyl chloroform		1000	x	U226	71-55-6
Methyl ethyl ketone		5000			78-93-3
Methyl hydrazine	500	10	x	P068	60-34-4
Methyl iodide		100			74-88-4
Methyl isobutyl ketone		5000	x	U161	108-10-1
Methyl isocyanate	500	10	x	P064	624-83-9
Methyl isothiocyanate	500	500	x		556-61-1
Methyl mercaptan	500	100		U153	74-93-1
Methyl methacrylate		1000	x	U162	80-62-6
Methyl parathion			x		298-00-0
Methyl phenkapton	500	500			3735-23-7
Methyl phosphonic dichloride	100	100			676-97-1
N-Methyl-2-pyrroli done			x		873-50-4
Methyl tert-butyl ether		1000	x		1634-04-4
Methyl thiocyanate	10,000	10,000			556-64-9
Methyl vinyl ketone	10	10			78-94-4
Methylene-bis-(phenyl iso- cyanate)(MBI)			x		101-68-8
Methylene chloride		1000			75-09-2
Methylene diphenyl diisocyanate		5000			101-68-8
Methylmercuric dicy- anamide	500/10,000	500			502-39-6
N-Methylolacrylamide			x		924-42-5
Methylthiouracil		10		U164	56-04-2
Methyltrichlorosilane	500	500	x		75-79-6
Metiram			x		9006-42-2
Metolcarb	100/10,000	1##		P190	1129-41-5
Metribuzin			x		21087-64-9
Mevinphos	500	10	x		7786-34-7
Mexacarbate	500/10,000	1000			315-18-4
Michler's ketone			x		90-94-8
Molinate			x	U365	2212-67-1
Mitomycin C	500/10,000	10		U010	50-07-7
Molybdenum trioxide			x		1313-27-5
Moncrotophos	10/10,000	10			6923-22-4
(Mono)chloropenta- fluoroethane (CFC 115)			x		76-15-3
Monoethylamine		100			75-04-7
Monomethylamine		100			74-89-5
Monuron			x		150-68-5
Muscimol	500/10,000	1000		P007	2763-96-4
Mustard gas	500	500	x		505-60-2
Myclobutanil			x		88671-89-0
n-Butyl alcohol			x		71-36-3
N,N'-Diethylhydrazine		10		U086	1615-80-1
N,N'-Dimethylaniline			x		121-69-7
N-N'-Dimethylforma mide			x		68-12-2
N-Nitroso-N-ethylurea		1	x		759-73-9
N-Nitroso-N-methy lurea		1	x		684-93-5
N-Nitrosodipheny lamine		100	x		86-30-6
N-Nitrosodimethy lamine		10			62-75-9
N-Nitrosomethylviny lamine		10	x		4549-40-0
N-Nitrosomorpholine		1	x		59-89-2
N-Nitrosonornicotine			x		16543-55-8
N-Nitrosopiperidine		10	x	U179	100-75-4
N-Nitrosopyrrolidine		1		U180	930-55-2

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Nabam			x		142-59-6
Naled		10	x		300-76-5
Naphthalene		100	x	U165	91-20-3
Naphthenic acid		100			1338-24-5
Nickel		100	x		7440-02-0
Nickel ammonium sul fate		100			15699-18-0
Nickel carbonyl	1	10		P073	13463-39-3
Nickel chloride		100			37211-05-5
Nickel chloride		100			7718-54-9
Nickel cyanide		10		P074	557-19-7
Nickel hydroxide		10			12054-48-7
Nickel nitrate		100			14216-75-2
Nickel sulfate		100			7786-81-4
Nicotine	100	100		P075	54-11-5
Nicotine sulfate	100/10,000	100			65-30-5
Nitrapyrin			x		1929-82-4
Nitric acid	1000	1000	x		7697-37-2
Nitric oxide	100	10		P076	10102-43-9
Nitrilotriacetic acid			x		139-13-9
p-Nitroaaniline			x		100-01-6
Nitrobenzene	10,000	1000	x	U169	98-95-3
Nitrocyclohexane	500	500			1122-60-7
Nitrogen			x		1836-75-5
Nitrogen dioxide	100	10		P078	10102-44-0
Nitrogen dioxide		10		P078	10544-72-6
Nitroglycerine		10	x	P081	55-63-0
Nitrophenol (mixed)		100			25154-55-6
Nitrosodimethylamine	1000	10	x	P082	62-75-9
Nitrotoluene		1000			1321-12-6
Norbormide	100/10,000	100			991-42-4
Norflurazon			x		27314--13- 2
O,O-Diethyl S-methyl dithiophosphate		5000		U087	3288-58-2
o-Anisidine hydrochlo ride			x		134-29-2
o-Anisidine		100	x		90-04-0
o-Dinitrobenzene		100	x		528-29-0
o-Nitrophenol		100	x		88-75-5
o-Nitrotoluene		1000			88-72-2
o-Toluidine		100	x	U328	95-53-4
Octachloronaphthalene			x		2234-13-1
Oryzalin			x		19044-88-3
Osmium tetroxide		1000	x	P087	20816-12-0
Ouabain	100/10,000	100			630-60-4
Oxamyl	100/10,000	1##		P194	23135-22-0
Oxetane,3,3- bis(chlo romethyl)-	500	500			78-71-7
Oxirane		10			75-21-8
Oxirane, (chlorome thyl)		100			106-89-8
Oxydemeton methyl			x		301-12-2
Oxydiazon			x		19666-30-9
Oxydisulfoton	500	500			2497-07-6
Oxyfluorfen			x		42874-03-3
Ozone	100	100	x		10028-15-6
p-Anisidine			x		104-94-9
p-Benzoquinone		10	x	U197	106-51-4
p-Chloro-o-toluidine			x		95-69-2
p-Chloroaniline			x		106-47-8
p-Chlorophenyl isocy anate			x		104-12-1
p-Cresidine			x		120-71-8
p-Dinitrobenzene		100	x		100-25-4
p-Nitrophenol		100	x	U170	100-02-7
p-Nitrosodipheny lamine			x		156-10-5
p-Nitrotoluene		1000			99-99-0

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Paraformaldehyde		1000			30525-89-4
Paraldehyde		1000	x		123-63-7
Paraquat dichloride	10/10,000	10	x		1910-42-5
Paraquat methosulfate	10/10,000	10			2074-50-2
Parathion	100	10	x	P089	56-38-2
Parathion, methyl	100/10,000	100		P071	298-00-0
Paris green (Cuprie acetoarsenite)	500/10,000	1			12002-03-8
PCNB		100			82-68-8
Pebulate			x	U391	1114-71-2
Pendimethalin			x		40487-42-1
Pentaborane	500	500			19624-22-7
Pentachloroethane		10	x	U184	76-01-7
Pentachloronitroben zene		100			82-68-8
Pentachlorophenol		10	x	U242	87-86-5
Pentadecyclamine	100/10,000	100			2570-26-5
Pentobarbital sodium			x		57-33-0
Peracetic acid	500	500	x		79-121-0
Perchloroethylene		10			127-18-4
Perchloromethyl mrcaptan	100	100			594-42-3
Permethrin			x		52645-53-1
Phenanthrene		5000	x		85-01-8
Phenol	500/10,000	1000	x	U188	108-95-2
Phenol,2,2'-thio bis (4- chloro-6-methyl	100/10,000	100			4418-66-0
Phenol,2,3,4,6-tetra chloro		10		U212	58-90-2
Phenol,2,4,5-trichloro		10	x	U230	95-95-4
Phenol,2,4,6-trichloro		10	x	U231	88-06-2
Phenol,3-(1-methyl ethyl), methylcar bamate	500/10,000	1##		P202	64-00-6
Phenol, methyl		100			1319-77-3
Phenothrin			x		26002-80-2
Phenoxarsine,10,10'- oxydi-	500/10,000	500			58-36-6
Phenyl dichloroarsine	500	1		P036	696-28-6
p-Phenylenediamine		5000	x		106-50-3
Phenylhydrazine hydrochloride	1000/ 10,000	1000			59-88-1
Phenylmercury acetate	500/10,000	100		P092	62-38-4
Phenylsilatrane	100/10,000	100			2097-19-0
Phenylthiourea	100/10,000	100		P093	103-85-5
Phenytoin			x		57-41-0
Phorate	10	10		P094	298-02-2
Phosacetim	100/10,000	100			4104-14-7
Phosfolan	100/10,000	100			947-02-4
Phosgene	10	10	x	P095	75-44-5
Phosmet	10/10,000	10			732-11-6
Phosphamidon	100	100			13171-21-6
Phosphine	500	100	x	P096	7803-51-2
Phosphonothioic acid methyl-O-(4-nitro phenyl)O-phenyl ester	500	500			2665-30-7
Phosphonothioic acid, methyl-O-ethyl-O- (4-(methylthio)phenyk Ester	500	500			2703-13-1
Phosphonothioic acid, methyl-,s-(2-(bis(1- methylethyl)amino Ethyl o-Ethyl Ester	100	100			50782-69-9
Phosphoric acid		5000	x		7664-38-2
Phosphoric acid, dimethyl 4-(methylthio)phenyl ester	500	500			3254-63-5
Phosphorothioc acid, O,O-diethyl, O- pyrazinyl ester		20			56-38-2
Phosphorothioc acid, O,O-diethyl, O- (40nitrophenyl) ester	500	100		P040	297-97-2
Phosphorothioic acid, O,O-	500	500			2587-90-8

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dimethyl-S-(2-methylthio)ethyl est					
Phosphorus	100	1	x		7723-14-0
Phosphorus oxychlo ride	500	1000			10025-87-3
Phosphorus pentachlo ride	500	500			10026-13-8
Phosphorus pentasul fide		100		U189	1314-80-3
Phosphorus pentoxide	10				1314-56-3
Phosphorus trichloride	1000	1000			7719-12-2
phthalic anhydride		5000			85-44-9
Physostigmine	100/10,000	1##		P204	57-47-6
Physostigmine, sali- cylate (1:1)	100/10,000	1##		P188	57-64-7
Picloram			x		1918-02-1
Picric acid			x		88-89-1
Picrotoxin	500/10,000	500			124-87-8
Piperidine	1000	1000			110-89-4
Piperonyl butoxide			x		51-03-6
Pirimifos-ethyl	1000	1000			23505-41-1
Piriimiphos methyl			x		29232-93-7
Polychlorinated biphe nyls		1	x		1336-36-3
Potassium arsenate		1			7784-41-0
Potassium arsenite	500/10,000	1			10124-50-2
Potassium bichromate		10			7778-50-9
Potassium bromate			x		7758-01-2
Potassium chromate		10			7789-00-6
Potassium cyanide	100	10		P098	151-50-8
Potassium dimeth yldithioccarbamate			x	U383	128-03-0
Potassium hydroxide		1000			1310-58-3
Potassium n-meth yldithiocarbamate			x	U377	137-41-7
Potassium permangan ate		100			7722-64-7
Potassium silver cya nide	500	1		P099	506-61-6
Profenofos			x		41198-08-7
Promecarb	500/10,000	1##		P201	2631-37-0
Prometryn			x		7287-19-6
Pronamide			x		23950-58-5
Propachlor			x		1918-16-7
Propanil			x		709-98-8
Propargite		10	x		2312-35-8
Propargyl alcohol		1000	x	P102	107-19-7
Propargyl bromide	10	10			106-96-7
Propfamphos			x		31218-83-4
Propiconazole			x		60207-90-1
Propiolactone,beta-	500	10	x		57-57-8
Propionaldehyde		1000	x		123-38-6
Propionic acid		5000			79-09-4
Propionic acid,2-(2,4,5-trichlorophenoxy)-		100		U233	93-72-1
Propionic anhydride		5000			123-62-6
Propenenitrile	500	10		P101	107-12-0
Propenenitrile,3- chloro-	1000	1000		P027	542-76-7
Propiophenone,4'- amino-	100/10,000				70-69-9
Propham		1##		U373	122-42-9
Propoxur		100	x		114-26-1
Propyl chloroformate	500	500			109-61-5
Propylene Dichloride		1000			78-87-5
Propylene (Propene)			x		115-07-1
Propylene oxide	10,000	100	x		75-56-9
Propyleneimine	10,000	1	x	P067	75-55-8
Prosulfocarb		1##		U387	52888-80-9

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Prothoate	100/10,000	100			2275-18-5
Pyrene	1000/ 10,000	5000			129-00-0
Pyrethrins		1			121-21-1
Pyrethrins		1			121-29-9
Pyrethrins		1			8003-34-7
Pyridine		1000	x	U196	110-86-1
Pyridine,2-methyl-5- vinyl-	500	500			140-76-1
Pyridine,4-amino-	500/10,000	1000		P008	504-24-5
Pyridine,4-nitro-1- oxide	500/10,000	500			1124-33-0
Pyriminil	100/10,000	100			53558-25-1
Quinoline		5000	x		91-22-5
Quinone		10			106-51-4
Quintobenzene		100			82-68-86
Quizalofop-ethyl			x		76578-14-8
Reserpine		5000		U200	50-55-5
Resmethrin			x		10453-86-8
Salcomine	500/10,000	500			14167-18-1
Sarin	10	10			107-44-8
Selenium		100	x		7782-49-2
Selenium dioxide		10		U204	7446-08-4
Selenium disulfide		10		U205	7448-56-4
Selenium oxychloride	500	500			7791-23-3
Selenious acid	1000/ 10,000	10		U204	7783-00-8
Selenouree		1000		P103	630-10-4
Semicarbazide hydro chloride	1000/ 10,000	1000			563-41-7
Sethoxydim			x		74051-80-2
Silane,(4-aminobutyl) diethoxymethyl-	1000				3037-72-7
Silver		1000	x		7440-22-4
Silver cyanide		1		P104	506-64-9
Silver nitrate		1			7761-88-8
Simazine			x		122-34-9
Sodium		10			7440-23-5
Sodium arsenate	1000/ 10,000	1			7631-89-2
Sodium arsenite	500/10,000	1			7784-46-5
Sodium azide (Na(N3))	500	1000	x	P105	26628-22-8
Sodium bichromate		10			10588-01-9
Sodium bifluoride		100			1333-83-1
Sodium bisulfite		5000			7631-90-5
Sodium cacodylate	100/10,000	100			124-65-2
Sodium chromate		10			7775-11-3
Sodium cyanide (Na(CN))	100	10		P106	143-33-9
Sodium dicamba			x		1982-69-0
Sodium dimethyldithio carbamate			x	U382	128-04-1
Sodium dodecylben zene sulfonate		1000			25155-30-0
Sodium fluoride		1000			7681-49-4
Sodium fluoroacetate	10/10,000	10	x	P058	62-74-8
Sodium hydrosulfide		5000			16721-80-5
Sodium hydroxide		1000			1310-73-2
Sodium hypochlorite		100			10022-70-5
Sodium hypochlorite		100			7681-52-9
Sodium methylate		1000			124-41-4
Sodium nitrite		100	x		7632-00-0
Sodium pentachlo rophenate			x		131-52-2
Sodium o-phenylphe noxide			x		132-27-4
Sodium phos- phate, dibasic		5000			10039-32-4
Sodium phos- phate,dibasic		5000			10140-65-5
Sodium phos- phate,dibasic		5000			7558-79-4
Sodium phosphate, tribasic		5000			10101-89-0
Sodium phosphate, tribasic		5000			10124-56-8
Sodium phosphate, tribasic		5000			10361-89-4

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Sodium phosphate, tribasic		5000			7601-54-9
Sodium phosphate, tribasic		5000			7758-29-4
Sodium phosphate, tribasic		5000			7785-84-4
Sodium selenate	100/10,000	100			13410-01-0
Sodium selenite	100/10,000	100			10102-18-8
Sodium selenite		100			7782-82-3
Sodium tellurite	500/10,000	500			10102-20-2
Strannane,acetoxy- triphenyl-	500/10,000	500			900-95-8
Strontium chromate		10			7789-06-2
Strychnine	100/10,000	10		P108	57-24-9
Strychnine, sulfate	100/10,000	10			60-41-3
Styrene		1000	x		100-42-5
Styrene oxide		100	x		96-09-3
Sulfotep	500	100		P109	3689-24-5
Sulfoxide,3-chloropro pyl octyl	500	500			3569-57-1
Sulfur dioxide	500	500			7446-09-5
Sulfur monochloride		1000			12771-08-3
Sulfur tetrafluoride	100	100			7783-60-0
Sulfur trioxide	100	100			7446-11-9
Sulfuric acid (acid aerosols including mists, vapors,gas, fog, and airborne forms of any particle size	1000	1000	x		7664-93-9
Sulfuric acid		1000			8014-95-7
Sulfuric acid, dimethyl ester	1000	100			77-78-1
Sulfurayl fluoride			x		2699-79-8
Sulprrofos			x		35400-43-2
Tabun	10	10			77-81-6
TCDD		1			1746-01-6
Tebuthiuron			x		34014-18-1
Tellurium	500/10,000				13494-80-9
Tellurium hexafluoride	100	100			7783-80-4
Temephos			x		3383-96-8
Terbacil			x		5902-51-2
Terbufos	100	100			13071-79-9
Tetrachloroethene		100			127-18-4
Tetrahloroethylene		100			127-18-9
Tetrachlorvinphos			x		961-11-5
Tetracycline hydrochlo ride			x		64-75-5
Tetraethyldithiopyr phosphate	100	10		P111	107-49-3
Tetraethyllead	100	10		P110	78-00-2
Tetraethyltin	100	100			597-64-8
Tetramethrin			x		7696-12-0
Tetramethyl Lead	100	100			75-74-1
Tetranitromethane	500	10		P112	509-14-8
Thallic oxide		100		P113	1314-32-5
Thallium		1000	x		7440-28-0
Thallium(1) carbonate	100/10,000	100		U215	6533-73-9
Thallium (I)sulfate	100/10,000	100		P115	10031-59-1
Thallium(I)nitrate		100		U217	10102-45-1
Thallium(I)selenide		1000		P114	12039-52-0
Thallous chloride	100/10,000	100		U216	7791-73-9
Thallous malonate	100/10,000	100			2757-18-8
Thallous sulfate	100/10,000	100		P115	7446-18-6
Thiabendazole			x		140-79-8
Thiobencarb			x		28249-77-6
Thiocarbazide	1000/ 10,000	1000			2231-57-4
Thiodicarb		1#	x	U410	59669-26-0
Thiofanox	100/10,000	100		P045	39196-18-4
Thionazin	500	100			297-97-2
Thiophanate ethyl			x		23564-06-9
Thiophanate-methyl		1##	x	U409	23564-05-8

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Thiram		10	x	U244	137-26-8
Thiophenol	500	100		P014	108-98-5
Thiosemicarbazide	100/10,000	100	x	P116	79-19-6
Thiourea		10	x		62-56-6
Thiourea,(2-chlorophe nyl)-	100/10,000	100		P026	5344-82-1
Thiourea, (2- methylphenyl)-	500/10,000	500			614-78-8
Thorium dioxide			x		1314-20-1
Titanium dioxide			x		13463-67-7
Titanium tetrachloride	100	1000	x		7550-45-0
Toluene		1000			108-88-3
Toluene2,4-diisocyan ate	500	100	x		584-84-9
Toluene2,6-diisocyan ate	100	100	x		91-08-7
Toluenediamine		10			95-80-7
Toluenediisocyanate		100			584-84-9
o-Toluidine		100			95-53-4
Toxaphene(Camphe clor)		1	x	P123	8001-35-2
trans 1,1-dichloro butene	500				110-57-6
trans-1,3-Dichloropro pene			x		10061-02-6
trans-1,4-Dichloro-2- butene	500	500	x		110-57-6
Triadimefon			x		43121-43-3
Triallate		1##	x	U389	2303-17-5
Triamiphos	500/10,000	500			1031-47-6
Triaziquone			x		68-76-8
Triazofos	500	500			24017-47-8
Tribenuron methyl			x		101200-48- 0
Tributyltin fluoride			x		1982-10-4
Tributultin methacry late			x		2155-70-6
S,S,S-Tributyltrithio phosphate			x		78-48-8
Triclopyr, triethylam monium salt			x		57213-69-1
Trichloroacetyl chloride	500	500	x		76-02-8
Trichloro(chlorome thyl) silane	100	100			1558-25-4
Trichloro(dichloro- phenyl) silane	500	500			27137-85-5
Trichloroethene		100			79-01-6
Trichloroethylene		100	x	U228	79-01-6
Trichloroethylsilane	500	500			115-21-9
Trichlorofon		100	x		52-68-6
Trichloronate	500	500			327-98-0
Trichlorophenol		10			25167-82-2
Trichlorophenylsilane	500	500			98-13-5
Triethanolamine dode-cylbenzene sulfonate		1000			27323-41-7
Triethoxysilane	500	500			998-30-1
Triethylamine		5000	x		121-44-8
Trifluralin		10	x		1582-09-8
Triforine			x		26644-46-2
Trimethylamine		100			75-50-3
Trimethylchlorosilane	1000	1000	x		75-77-4
Trimethylolpropane phosphite	100/10,000	100			824-11-3
Trimethyltin chloride	500/10,000	500			1066-45-1
Triphenyltin chloride	500/10,000	500	x		639-58-7
Triphenyltin hydroxide			x		76-87-9
Tris(2-chloroethyl) amine	100	100			555-77-1
Trypan blue		10	x	U236	72-57-1
Uracil,5-[bis(2-chloro ethyl)amino]-		10		U237	66-75-1
Uranyl acetate		100			541-09-3
Uranyl nitrate		100			10102-06-4
Uranyl nitrate		100			36478-76-9
Urea, N-methyl -N- nitroso		1			
Urethane		100			51-79-6
Valinomycin	1000/ 10,000	1000			2001-95-8
Vanadium(fume or dust)			x		7440-62-2

Chemical Name	Extremely Haz Sub 40 CFR 355 (lb)	Haz Sub RQ 40 CFR 302.4 (lb)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Vanadium pentoxide	100/10,000	1000		P120	1314-62-1
Vanadyl sulfate		1000			27774-13-6
Vinclozolin			x		50471-44-8
Vinyl acetate, monomer	1000	5000	x		108-05-4
Vinyl bromide		100	x		593-60-2
Vinylidienechloride		100			75-35-4
Warfarin	500/10,000	100		P001	81-81-2
Warfarin sodium	100/10,000	100			129-06-6
Xylene		100			1330-20-7
m-Xylene		1000			108-38-3
o-Xylene		1000			95-47-6
p-Xylene		100			106-42-3
Xylene, isomers and mixture		100			1330-20-7
Xylene, mixed		100			1330-20-7
Xylenol		1000			1300-71-6
Xylene dichloride	100/10,000	100			28347-13-9
Zinc		1000	x		7440-66-6
Zinc acetate		1000			557-34-6
Zinc ammonium chlo ride		1000			52628-25-8
Zinc ammonium chlo ride		1000			14639-97-5
Zinc ammonium chlo ride		1000			14639-98-6
Zinc borate		1000			1332-07-6
Zinc bromide		1000			7699-45-8
Zinc carbonate		1000			3486-35-9
Zinc chloride		1000			7646-85-7
Zinc cyanide		10		P121	557-21-1
Zinc, dichloro(4,4-dimethyl-5(((methylamino) carbnyl)oxy)imino) Pentane-nitrile)-,(T-4)	100/10,000	100			58270-08-9
Zinc fluoride		1000			7783-49-5
Zinc formate		1000			557-41-5
Zinc hydrosulfite		1000			7779-86-4
Zinc nitrate		1000			7779-88-6
Zinc phenolsulfonate		5000			127-82-2
Zinc phosphide	500	100		P122	1314-84-7
Zinc silicofluoride		5000			16871-71-9
Zinc sulfate		1000			7733-02-0
Zineb			x		12122-67-7
Ziram		1##		P205	137-30-4
Zirconium nitrate		5000			13746-89-9
Zirconium potassium fluoride		1000			16923-95-8
Zirconium sulfate		5000			14644-61-2
Zirconium tetrachloride		5000			10026-11-6

Appendix 3-2

Maximum Allowable Capacity of Containers and Portable Tanks (29 CFR 1910.106(d)(2), Table H-12)

Container Type	Flammable Liquids			Combustible Liquids	
	Class IA	Class IB	Class IC	Class II	Class III
Glass or approved plastic	1 pt	1 qt	1 gal	1 gal	1 gal

Metal (other than DOT drums)	1 gal	5 gal	5 gal	5 gal	5 gal
Safety cans	2 gal	5 gal	5 gal	5 gal	5 gal
Metal drums (DOT specifications)	60 gal	60 gal	60 gal	60 gal	60 gal
Approved portable tanks	660 gal	660 gal	660 gal	660 gal	660 gal

Appendix 3-3

Storage in Inside Rooms
(29 CFR 1910.106(d)(4), Table H-13)

Fire Protection Provided[1]	Fire Resistance (hours)	Maximum Size	Total Allowable Quantities (gal/ft2 floor area)
Yes	2	500 ft^2	10
No	2	500 ft^2	5
Yes	1	150 ft^2	4
No	1	150 ft^2	2

[1]Fire protection system will be sprinkler, water spray, or other approved method.

Appendix 3-4

Flammable/Combustible Materials
(29 CFR 1910.106(d)(5) and 1910.106(d)(6), Tables H-14 through H-17)

Indoor Container Storage

Class	Liquid Storage Level	Protected Storage Maximum per Pile	Unprotected Storage Minimum per Pile
A	Ground and upper floors Basement	2750 gal (50) Not permitted	600 gal (12) Not permitted
B	Ground and upper floors Basement	5500 gal (100) Not permitted	1375 gal (25) Not permitted
C	Ground and upper floors Basement	16,500 gal (300) Not permitted	4125 gal (25) Not permitted
II	Ground and upper floors Basement	16,500 gal (300) 5500 gal (100)	4125 gal (75) Not permitted
III	Ground and upper floors Basement	55,000 gal (1000) 8250 gal (450)	13,750 gal (250) Not permitted

(NOTE: Numbers in parenthesis indicate corresponding number of 55-gal drums.)

NOTE 1: When two or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate maximum gallonages.

NOTE 2: Aisles will be provided so that no container is more than 12 ft from an aisle. Main aisles will be at least 3-ft wide and side aisles at least 4-ft wide.

NOTE 3: Each pile shall be separated from the others by at least 4 ft.

Outdoor Container Storage

1 Class	2 Maximum per pile (gal)	3 Distance between piles (ft)	4 Distance to property line that can be built upon (ft)	5 Distance to street, alley or public way (ft)
IA	1100	5	20	10
IB	2200	5	20	10
IC	4400	5	20	10
II	8800	5	10	5
III	22,000	5	10	5

NOTE 1: When two or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate gallonages.

NOTE 2: Within 200 ft of each container, there will be a 12-ft wide access way to permit approach of fire control apparatus.

NOTE 3: The distances listed apply to properties that have protection for exposures as defined. If there are exposures and such protection for exposures does not exist, the distances in column 4 will need to be doubled.

NOTE 4: When total quantity stored does not exceed 50 percent of maximum per pile, the distance in columns 4 and 5 may be reduced 50 percent, but not less than 3 ft.

Indoor Portable Tank Storage

Class Liquid	Storage Level	Protected Storage Maximum per Pile (gal)	Unprotected Storage Minimum per Pile (gal)
IA	Ground and upper floors Basement	Not permitted Not permitted	Not permitted Not permitted
IB	Ground and upper floors Basement	20,000 Not permitted	2000 Not permitted
IC	Ground and upper floors Basement	40,000 Not permitted	5500 Not permitted
II	Ground and upper floors Basement	40,000 20,000	5500 Not permitted
III	Ground and upper floors Basement	60,000 20,000	22,000 Not permitted

NOTE 1: When one or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate maximum gallonages.

NOTE 2: Aisles will be provided so that no container is more than 12 ft from an aisle. Main aisles will be at least 3-ft wide and side aisles at least 4-ft wide.

NOTE 3: Each pile shall be separated from each other by at least 4 ft.

Outdoor Portable Tank Storage

1 Class	2 Maximum per pile (gal)	3 Distance between piles (ft)	4 Distance to property line that can be built upon (ft)	5 Distance to street, alley, or public way (ft)
IA	2200	5	20	10
IB	4400	5	20	10
IC	8800	5	20	10
II	17,600	5	10	5
III	44,000	5	10	5

NOTE 1: When two or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate gallonages.

NOTE 2: Within 200 ft of each container, there will be a 12-ft wide access way to permit approach of fire control apparatus.

NOTE 3: The distances listed apply to properties that have protection for exposures as defined. If there are exposures, and such protection for exposures does not exist, the distances in column 4 will be doubled.

NOTE 4: When total quantity stored does not exceed 50 percent of maximum per pile, the distance in columns 4 and 5 may be reduced 50 percent, but not less than 3 ft.

Appendix 3-5

Hazardous Materials/Hazardous Waste Storage Incompatibility Chart

Substances in bold have detailed example lists on the next page.

If the material contains:	It may not be stored with any of the following:
Acid (pH below 2.0)	**Caustics** (pH above 12.5) **Reactive Metals** Alcohol Water Aldehydes Halogenated, Nitrated, or Unsaturated Hydrocarbons **Reactive Organic Compounds and Solvents** Spent Cyanide and Sulfide Solutions **Oxidizers**
Caustic (pH above 12.5)	**Acid** (pH below 2.0) **Reactive Metals** Alcohol Water Aldehydes Halogenated, Nitrated, or Unsaturated Hydrocarbons **Reactive Organic Compounds and Solvents**
Reactive Metals	**Caustics** **Acids** Alcohol Aldehydes Halogenated, Nitrated, or Unsaturated Hydrocarbons **Reactive Organic Compounds and Solvents** **Oxidizers**
Reactive Organic Compounds and Solvents	**Caustics** **Acids** **Reactive Metals**
Spent Cyanide and Sulfide Solutions	**Acids**
Oxidizers	Acetic or Other Organic Acids Concentrated Mineral Acids **Reactive Metals** **Reactive Organic Compounds and Solvents** **Ignitable [Flammable/Combustible] Wastes***

* "Ignitable" in this context refers to substances with a flashpoint below 140× °F, and includes:
Combustible substances, with a flashpoint below 140× °F
Flammable substances, with a flashpoint below 100× °F.

Some Deadly Combinations

Acids + Oil or Grease = Fire

Acids + Caustics = Heat/Spattering

Caustics + Epoxies = Extreme Heats

Chlorine Gas + Acetylene = Explosion

Flammable Liquids + Hydrogen Peroxide = Fire/Explosion

Aluminum Powder + Ammonium Nitrate = Explosion

Sodium Cyanide + Sulfuric Acid = Lethal Hydrogen Cyanide

Ammonia + Bleach = Noxious Fumes

In general: **Reactives** must be segregated from **Ignitables**
Acids must be segregated from **Caustics**
Corrosives should be segregated from **Flammables**
Oxidizers should be segregated from **EVERYTHING**
Many Corrosives are "Water Reactive"
Most **Organic Reactives** must be segregated from **Inorganic Reactives** (metals)

Ignitables (Flammables/Combustibles)	**Corrosives**	
	Acids	**Caustics**
Carburetor Cleaners Engine Cleaners Epoxy, Resins, Adhesives, and Rubber Cements Finishes Fuels Lacquers Paints Paint Thinners Paint Wastes Pesticides that contain Solvents (such as Methyl Alcohol, Ethyl Alcohol, Isopropyl Alcohol, Toluene, Xylene). Petroleum Solvents (Drycleaning Fluid) Solvents: Acetone Benzene Carbon Tetrachloride (Carbon Tet) Ethanol (Ethyl Alcohol) Ethyl Benzene Isopropanol (Isopropyl Alcohol) Kerosene (Fuel Oil #1) Methanol (Wood Alcohol) Methyl Ethyl Ketone (MEK) Petroleum Distillates Tetrahydrofuran (THF) Toluene (Methacide, Methylbenzene, Methylbenzol, Phenylmethane, Toluol, Antisal 1A) White Spirits (White Spirits, Mineral Spirits, Naptha) Xylene (Xylol) Stains Stripping Agents Varsol Waste Fuels Waste Ink Wax Removers Wood Cleaners	Battery Acids Degreasers and Engine Cleaners Etching Fluids Hydrobromic Acid Hydrochloric Acid (Muriatic Acid) Nitric Acid (<40%) (Aquafortis) Phosphoric Acid Rust Removers Sulfuric Acid (Oil of Vitriol) **Reactive Metals** Lithium (Batteries) Aluminum Beryllium Calcium Magnesium Sodium Zinc Powder **Oxidizers** Chlorine Gas Nitric Acid (>40%), aka Red Fuming Nitric Nitrates (Sodium Nitrate, Ammonium Nitrate) Perchlorates Perchloric Acid Perioxides Calcium Hypochlorite (>60%)	Acetylene Sludge Alkaline Battery Acids Alkaline Cleaners Alkaline Degreasers Alkaline Etching Fluids Lime and Water Lime Wastewater Potassium Hydroxide (Caustic Potash) Rust Removers Sodium Hydroxide (Caustic Soda, Soda Lye) **Reactive Organic Compounds and Solutions** Alcohols Aldehydes Chromic Acids (from chrome plating, copper stripping and aluminum anodizing) Cyanides (from electroplating operations) Hypochlorides (from water treatment plants, swimming pools, sanitizing operations) Organic Peroxides (including Hydrogen Peroxide) Perchlorates Permanganates Sulfides

Appendix 3-6

Placarding Guidelines

The following table specifies placards that should be used for the transportation of ANY QUANTITY of the listed hazardous material.

Hazardous Materials

Classed or Described As	*Placards*
Class A Explosives	EXPLOSIVES A
Class B Explosives	EXPLOSIVES B
Poison A	POISON GAS
Flammable Solid	FLAMMABLE SOLID

(NOTE: Any of the above substances that are dangerous when wet should also have the placard: DANGEROUS WHEN WET, in addition to their primary placard.)

The following table specifies placards that should be used for the transportation of 1000 lb or more of the listed hazardous materials.

Hazardous Materials

Classed or Described As	***Placards***
Class C Explosives	**FLAMMABLE**
Nonflammable Gas	**NONFLAMMABLE GAS**
Nonflammable Gas (Chlorine)	**CHLORINE**
Nonflammable Gas (Fluorine)	**POISON**
Nonflammable Gas (Oxygen, pressurized liquid)	**OXYGEN**
Flammable Gas	**FLAMMABLE GAS**
Combustible Liquid	**COMBUSTIBLE**
Flammable Liquid	**FLAMMABLE**
Flammable Solid	**FLAMMABLE SOLID**
Oxidizer	**OXIDIZER**
Organic Peroxide	**ORGANIC PEROXIDE**
Poison B	**POISON**
Corrosive Material	**CORROSIVE**
Irritating Material	**DANGEROUS**

1. **Placards should be affixed on both sides, rear and front, of the motor vehicle.**
2. **Place placards clear of ladders, pipes, and tarps.**
3. **Placards should be at least 3 in. away from advertising and markings.**
4. **The DANGEROUS placards may be used when a motor vehicle contains two or more classes of hazardous materials requiring different placards. The DANGEROUS placard may be used in place of the separate placards for each class.**
5. **Portable tanks having a rated capacity of 1000 gal or more must be placarded.**
6. **Cargo tanks having any quantity of hazardous material must be placarded.**

Appendix 3-7
American Table of Distances for Storage of Explosives[1-5]
(29 CFR 1910.109(c)(1) Table H-21)[Added August 1999]

Explosives		Distance in feet when storage is barricaded:
Pounds over	Pounds not over	Separation of Magazines
2	5	6
5	10	8
10	20	10
20	30	11
30	40	12
40	50	14
50	75	15
75	100	16
100	125	18
125	150	19
150	200	21
200	250	23
250	300	24
300	400	27
400	500	29
500	600	31
600	700	32
700	800	33
800	900	35
900	1000	36
1000	1200	39
1200	1400	41
1400	1600	43
1600	1800	44
1800	2000	45
2000	2500	49
2500	3000	52
3000	4000	58
4000	5000	61
5000	6000	65
6000	7000	68
7000	8000	72
8000	9000	75
9000	10,000	78
10,000	12,000	82
12,000	14,000	87
14,000	16,000	90
16,000	18,000	94
18,000	20,000	98
20,000	25,000	105
25,000	30,000	112
30,000	35,000	119
35,000	40,000	124
40,000	45,000	129
45,000	50,000	135
50,000	55,000	140

55,000	60,000	145
60,000	65,000	150
65,000	70,000	155
70,000	75,000	160
75,000	80,000	165
80,000	85,000	170
85,000	90,000	175
90,000	95,000	180
95,000	100,000	185
100,000	110,000	195
110,000	120,000	205
120,000	130,000	215
130,000	140,000	225
140,000	150,000	235
150,000	160,000	245
160,000	170,000	255
170,000	180,000	265
180,000	190,000	275
190,000	200,000	285
200,000	210,000	295
210,000	230,000	315
230,000	250,000	335
250,000	275,000	360
275,000	300,000	385

[1]Natural Barricade - natural features of the ground, such as bills, or timber of sufficient density that the surrounding exposures which require protection cannot be seen from the magazine when the trees are bare of leaves.

[2]Artificial Barricade - an artificial mound or revetted wall of earth of a minimum thickness of 3 ft.

[3]Barricade - when a building containing explosives is effectually screened from a magazine, building, railway, or highway, either by a natural barricade, or by an artificial barricade of such height that a straight line from the top an any sidewall of the building containing explosives to the eave line of any magazine, or building, or to a point 12 ft above the center of a railway or highway, will pass through such intervening natural or artificial barricade.

[4](NOTE: when two or more storage magazines are located on the same property, each magazine must comply with the minimum distances specific from inhabited buildings, railways, and highways, and in addition, they should be separated from each other by not less than the distances shown for Separation of Magazines, except that the quantity of explosives contained in cap magazines shall govern in regard to the spacing of said cap magazines from magazines containing other explosives. If any two or more magazines are separated from each other by less than the specific Separation of Magazines distances, then such two or more magazines, as a group, must be considered as one magazine, and the total quantity of explosives stored in such group must be treated as if stored in a single magazine located on the site of any magazine of the group, and must comply with the minimum of distances specified from other magazines, inhabited buildings, railways, and highways.

[5]This table applies only to the permanent storage of commercial explosives. It is not applicable to transportation of explosives, or any handling or temporary or incidental thereto. It is not intended to apply to bombs, projectiles, or other heavily encased explosives.

SECTION 4

HAZARDOUS WASTE MANAGEMENT

U.S. ECAH, September 1999

A. Applicability

This section applies to FWS facilities that generate, store, transport, treat, or dispose of any type of hazardous waste. Federal regulations establish different regulatory requirements based on the amount of hazardous waste generated.

This section and its associated evaluation checklists are more complex than other sections in this volume. Not all evaluation items will be applicable to a facility. Guidance is provided on the checklists to direct the evaluator to the regulations concerning the type of hazardous waste activities/facilities on the facility. This section does not include the requirements which apply to the operation and management of a treatment, storage, or disposal facility since the large majority of FWS facilities do not fall under this classification.

B. Federal Legislation

- *The Resource Conservation and Recovery Act* (RCRA), Subtitle C. This law, Public Law (PL) 98-616 (42 U.S. Code (USC) 6921-6939b) establishes standards and procedures for the handling, storage, treatment, and disposal of hazardous waste.

- *The Federal Facility Compliance Act* (FFCA) of 1992. This act provides for a waiver of sovereign immunity with respect to Federal, state, and local procedural and substantive requirements relating to RCRA solid and hazardous waste laws and regulations. Additionally, it defines hazardous waste in relation to public vessels, expands the definition of mixed waste, addresses the issue of munitions, and discusses waste discharges to Federally owned treatment works (FOTWs).

- *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) of 1980. This act was amended by the *Superfund Amendments and Reauthorization Act* (SARA) of 1986, 42 USC 9601-11050 and 10 USC 2701-2810 et. al. This act has four basic elements. The first element is the establishment of an information gathering and analysis system for the characterization of contaminated sites. This information is used in the development of the USEPA's National Priorities List (NPL). The second element is the establishment of Federal authority to respond to hazardous substance emergencies and cleanup leaking sites. The third element is the creation of a trust fund to pay for removal and remedial actions. The fourth element makes persons who are responsible for hazardous substance releases liable for cleanup and restitution costs.

- *Community Environmental Response Facilitation Act*. This act, PL 102-426, amends CERCLA. It requires that prior to the termination of Federal activities on any real property owned by the Federal Government, agencies must identify real property where no hazardous substance was stored, released, or disposed of. The purpose is to identify property that offers the greatest opportunity for reuse and redevelopment.

- Executive Order (EO) 12580, *Superfund Implementation*. This EO, dated 23 January 1987, mandates the development of the National Response Team (NRT) and redelegates authority for various functions related to Superfund from the President to other Federal agencies.

- Federal regulations used to develop the checklist include:

    - 40 CFR 260, *Hazardous Waste Management System: General.*
    - 40 CFR 261, *Identification and Listing of Hazardous Waste.*
    - 40 CFR 262, *Standards Applicable to Generators of Hazardous Waste.*
    - 40 CFR 263, *Standards Applicable to Transporters of Hazardous Waste.*
    - 40 CFR 264, *Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities.*
    - 40 CFR 265, *Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.*
    - 40 CFR 266, *Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities.*
    - 40 CFR 268, *Land Disposal Restrictions.*
    - 49 CFR 172-179, *Transportation Regulations.*

C. State/Local Regulations

Many states have met the U.S. Environmental Protection Agency (USEPA) requirements in 40 CFR 271 and have been authorized to manage their own state programs. RCRA encourages states to develop their own hazardous waste statutes and to operate regulatory programs. Many states have adopted the USEPA regulations by reference or have promulgated regulations which are identical to the USEPA regulations, while other states have promulgated regulations stricter than the Federal RCRA. These differences between individual state regulations and the Federal program require that evaluators check the status of the state's authorization and then determine which regulations apply. Since the section checklists are based exclusively on the requirements of the Federal RCRA/USEPA program, it is necessary to determine in what ways the applicable state program differs from the RCRA/USEPA program.

D. FWS/DOI Manuals

- 561 FW 6, *Compliance Requirements RCRA - Hazardous Waste.* This chapter, dated 9 July 1995, provides guidance for RCRA hazardous waste management at Service facilities.

E. Key Compliance Requirements

- Generator Requirements - Responsibilities of facilities are based on the amount of waste being generated in 1 mo. Typical wastes include solvents, paint, contaminated antifreeze or oil, and sludges. In some states, used oil and other substances have been classified as a hazardous waste and therefore need to be included in the total amount of waste being generated. Within Federal regulations there are three classifications:
    1. A conditionally exempt small quantity generator (CESQG) produces no more than 100 kg [≈ 220 lb] of hazardous waste and no more than 1 kg [≈ 2.20 lb] of acute hazardous waste in any calendar month. They cannot generate more than 100 kg [≈ 220 lb] in one month of any residue or contaminated soil, waste, or other debris from the clean-up of a spill, into or on any land or water, of any acute hazardous wastes. They also do not accumulate onsite more than 1000 kg [≈ 2205 lb] of hazardous waste and no more than 1 kg [≈ 2.20 lb] of acute hazardous waste at any one time. When either the volume of waste produced in 1 mo exceeds 100 kg [≈ 220 lb] of nonacutely hazardous waste or more than 1 kg [≈ 2.20 lb] of acutely hazardous waste or more than 1000 kg [≈ 2205 lb]

of waste has accumulated onsite, the facility is required to comply with the more stringent standards applicable to a small quantity generator (SQG) or a Generator.

2. An SQG produces between 100 [≈ 220 lb] and 1000 kg [≈ 2205 lb] of hazardous waste and no more than 1 kg [≈ 2.20 lb] acute hazardous waste in any calendar month. They cannot generate more than 100 kg [≈ 220 lb] in one month of any residue or contaminated soil, waste, or other debris from the clean-up of a spill, into or on any land or water, of any acute hazardous wastes. The waste cannot accumulate onsite for more than 180 days unless the waste must be transported more than 200 mi to a TSDF. In that situation, the waste can accumulate for 270 days. But at no time is there to be more than 6000 kg [≈ 13,227 lb] of waste accumulated at the facility. When the accumulation time onsite is exceeded, or more than 6000 kg [≈ 13,227 lb] of waste is onsite, the facility is required to apply for a permit and comply with the standards of 40 CFR 264 and 40 CFR 265.
3. A Generator produces 1000 kg [≈ 2205 lb] or more of hazardous waste or more than 1 kg [≈ 2.20 lb] acute hazardous waste in any calendar month. This classification is sometimes referred to as a large quantity generator.

(NOTE: Using water, which weighs 8.34 lb/gal [≈ 3.78 kg/gal] as a basis of measurement, 100 kg [≈ 220 lb] would equal about 26.5 gal [≈ 100 L], 1000 kg [≈ 2205 lb] would equal about 265 gal [≈1003 L]).

Whether the facility is a CESQG, an SQG, or a Generator determines the type of records the facility is required to keep and design standards for storage areas. Storage areas connected with a generation point are often referred to as accumulation points.

Regardless of the amount of hazardous waste generated, every facility is required to test or use knowledge of materials or processes used to determine if it is a listed hazardous waste or has hazardous characteristics. Every facility is also required to store and/or accumulate hazardous waste in containers that are compatible with the waste, undamaged, and labeled to indicate the contents.

Comparison of RCRA Generator Requirements

Requirement	CESQG	SQG	Generator
Identify HW	Yes	Yes	Yes
Quantity Limits	< 100 kg/mo [≈ 220 lb/m]	100 kg/mo [≈ 220 lb] - 1000 kg/mo [≈ 2205 lb]	>1000 kg/mo [≈ 2205 lb/mo]
Acute Waste Limits	< 1 kg/mo [≈ 2.20 lb/mo]	< 1 kg/mo [≈ 2.20 lb/mo]	any quantity
Facility Receiving Waste	State approved or RCRA permitted	RCRA permitted facility	RCRA permitted facility
USEPA ID Number	Not Required	Required	Required
RCRA Personnel Training	Not Required	Basic Training Required	Required
DOT Training	Required	Required	Required
Exception Report	Not Required	Required > 60 days	Required > 45 days
Biennial Report	Not Required	Not Required	Required
Onsite Accumulation Limits (without permit)	< 1000 kg [≈ 2205 lb] hazardous waste < 1 kg [≈ 2.20 lb]	< 6000 kg [≈ 13,228 lb] hazardous waste < 1 kg [≈ 2.20 lb]	Any quantity

Requirement	CESQG	SQG	Generator
	acutely hazardous waste	acutely hazardous waste	
Accumulation Time Limits (without permit)	None	< 180 days or < 270 days (>200 mi)	< 90 days + 30 days granted by USEPA
Storage Requirements	None	Basic requirements with technical standards for containers or tanks	Full compliance with management of containers or tanks
Use Manifests	No	Yes*	Yes

* Unless the waste is reclaimed under contractual agreement and properly marked and labeled.

- Transport Requirements - Containers of hazardous waste shipped offsite must be labeled to identify the waste and its hazard class. Transporters of hazardous waste required to be manifested must have a USEPA identification number and must comply with manifest management requirements.

- Accumulation Point Management - An accumulation point is an area where hazardous waste is accumulated or stored before being turned in for disposal. Storage in these areas is temporary, and the permissible length of time for accumulation depends on what size generator the facility is.

- Satellite Accumulation Point Management - A satellite accumulation point is an area at which no more than 55 gal of a hazardous waste or 1 qt of an acute hazardous waste is accumulated at or near the point of generation. The satellite accumulation point is under the control of one operator of the process generating the waste. When the 55 gal limit is reached the operator has 3 days to move the waste to a 90-day or permitted storage area or a permitted TSDF. These standards only apply to an SQG or a Generator.

- Universal Wastes - These requirements apply to batteries, pesticides, and thermostats as defined in 40 CFR 273. There are alternate standards for the handling of these wastes instead of the requirements found in 40 CFR 260 through 272. Handlers can be classified as either a large quantity handler of universal waste (5000 kg [≈ 11,111 lb] or more in 1 yr) or a small quantity handler of universal waste (less than 5000 kg [≈ 11,111 lb] in 1 yr). Depending on classification, the handler has to meet requirements concerning management of the waste, marking and labeling, notifications, and transportation. Additionally, there are standards for universal waste transporters and universal waste destination facilities (40 CFR 273). These regulations are only effective upon adoption by the state RCRA program, except in those areas without an authorized program.

- Recordkeeping - Regardless of the regulatory requirements concerning the length of time records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

F. Key Compliance Definitions

- *Aboveground Tank* - a device that meets the definition of a tank in 40 CFR 260.10 and that is situated in such a way that the entire surface area of the tank is completely above the plane of the adjacent surrounding surface and the entire surface area of the tank (including the tank bottom) is able to be visually inspected (40 CFR 260.10).

- *Active Life* - the period from the initial receipt of hazardous waste at the facility until the Regional Administrator receives certification of final closure (40 CFR 260.10).

- *Acute Hazardous Waste* - any waste listed under 40 CFR 261.31 - 261.33(c) with a hazard code of H. These include USEPA Hazardous waste numbers: F020, F021, F022, F023, F026, and F027 (40 CFR 261.31 through 261.33).

- *Aquifer* - a geologic formation or group of formations, or part of a formation, capable of yielding a significant amount of groundwater to wells or springs (40 CFR 260.10).

- *Average Volatile Organic (VO) Concentration* - the mass-weighted average VO concentration of a hazardous waste (40 CFR 265.1081).

- *Battery* - a device consisting of one or more electrically connected electrochemical cells which is designed to receive, store, and deliver electric energy. An electrochemical cell is a system consisting of an anode, cathode, and an electrolyte, plus such connections (electrical and mechanical) as may be needed to allow the cell to deliver or receive electrical energy. The term battery also includes an intact, unbroken battery from which the electrolyte has been removed (40 CFR 260.10 and 273.6).

  In relation to the concept of universal wastes, this term includes all batteries except the following (40 CFR 273.2(b)):
  1. spent lead acid batteries that are managed under 40 CFR 266, Subpart G [reclamation of spent lead acid batteries that are recyclable]
  2. batteries as defined above that are not yet wastes under 40 CFR 261, including those that do not meet the criteria for waste generation (see definition of Waste Battery)
  3. batteries as defined above that are not hazardous waste. A battery is a hazardous waste if it exhibits one or more of the characteristics identified in 40 CFR 261, Subpart C.

- *Boiler* - an enclosed device using controlled flame combustion and having the following characteristics (40 CFR 260.10):
  1. the unit has physical provisions for recovering and exporting thermal energy in the form of steam, heated fluids, or heated gases
  2. the unit's combustion chamber and primary energy recovery section(s) must be of integral design
  3. while in operation, the unit maintains a thermal energy recovery efficiency of at least 60 percent
  4. the unit exports and utilizes at least 75 percent of the recovered energy.

- *Certification* - a statement of professional opinion based upon knowledge and belief (40 CFR 260.10).

- *Characteristics of Hazardous Waste* - the characteristics of ignitability, corrosivity, reactivity, and toxicity which identify hazardous waste (40 CFR 261.20 through 261.24).

- *Closed Portion* - the portion of a facility which has been closed in accordance with the approved closure plan and all applicable closure requirements (40 CFR 260.10).

- *Closure Device* - a cap, hatch, lid, plug, seal, valve, or other type of fitting that blocks an opening in a cover such that when the device is secured in the closed position it prevents or reduces air pollutant emissions to the atmosphere. Closure devices include devices that are detachable from the cover (e.g., a sampling port cap), manually operated (e.g., hinged access lid or hatch), or automatically operated (e.g., a spring loaded pressure relief valve) (40 CFR 265.1081).

- *Component* - refers to either the tank or the ancillary equipment of the tank system (40 CFR 260.10).

- *Consignee* - the ultimate treatment, storage, or disposal facility in a receiving country to which the hazardous waste will be sent (40 CFR 262.51).

- *Container* - any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled (40 CFR 260.10).

- *Containment Building* - a hazardous waste management unit that is used to store or treat hazardous waste under 40 CFR 264.1100 through 264.1103 and 40 CFR 265.1100 through 1103 (40 CFR 260.10).

- *Contingency Plan* - a document setting out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment (40 CFR 260.10).

- *Corrosion Expert* - a person who, by reason of knowledge of the physical sciences and the principles of engineering and mathematics, acquired by a professional education and related practical experiences, is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Such a person must be certified as being qualified by the National Association of Corrosion Engineers (NACE) or be a registered professional engineer who has certification and licensing that includes education and experience in corrosion control and/or buried or submerged metal piping systems or tanks (40 CFR 260.10).

- *Cover* - a device that provides a continuous barrier over the hazardous waste managed in a unit to prevent or reduce air pollutant emissions to the atmosphere. A cover may have openings (such as access hatches, sampling ports, gauge wells) that are necessary for operation, inspection, maintenance, and repair of the unit on which the cover is used. A cover may be a separate piece of equipment which can be detached and removed from the unit or a cover may be formed by structural features permanently integrated into the design of the unit (40 CFR 265.1081).

- *Debris* - solid material exceeding a 60 mm particle size that is intended for disposal and that is: a manufactured object; or plant or animal matter; or natural geologic material. The following materials are not debris: any material for which a specific treatment standard is provided; process residuals such as smelter slag and residues from the treatment of waste, wastewater, sludges, or air emissions residues; and intact containers of hazardous waste that are not ruptured and retain at least 75 percent of their original volume (40 CFR 268.2).

- *Designated Facility* - a hazardous waste TSDF that is identified on a manifest as the destination of a hazardous waste shipment. The facility must have an appropriate permit, interim status, or be regulated under specific recycling requirements (40 CFR 260.10).

- *Destination Facility* - a facility that treats, disposes of, or recycles a particular category of universal waste, except small quantity handlers of universal waste batteries and thermostats or a large quantity handlers of universal waste batteries or thermostats. A facility at which a particular category of universal waste is only accumulated is not a destination facility for the purposes of managing that category of universal waste (40 CFR 262.10 and 273.6).

- *Detonation* - an explosion in which chemical transformation passes through the material faster than the speed of sound (0.33 km/s at sea level) (40 CFR 265.382).

- *Dike* - an embankment or ridge of either natural or manmade materials used to prevent the movement of liquids, sludges, solids, or other materials (40 CFR 260.10).

- *Discharge or Hazardous Waste Discharge* - the accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water (40 CFR 260.10).

- *Disposal* - the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters (40 CFR 260.10).

- *Disposal Facility* - a facility or part of a facility at which hazardous waste is intentionally placed into or on any land or water, and at which waste will remain after closure. The term disposal facility does not include a corrective action management unit into which remediation wastes are placed (40 CFR 260.10).

- *Enclosure* - a structure that surrounds a tank or container, captures organic vapors emitted from the tank or container, and vents the captured vapors through a closed-vent system to a control device (40 CFR 265.1081).

- *EPA Acknowledgment of Consent* - the cable sent to the USEPA from the U.S. Embassy in a receiving country that acknowledges the written consent of the receiving country to accept the hazardous waste and describes the terms and conditions of the receiving country's consent to the shipment (40 CFR 262.51).

- *EPA Hazardous Waste Number* - the number assigned by USEPA to each hazardous waste listed in 40 CFR 261, Subpart D and to each characteristic identified in 40 CFR 261, Subpart C (40 CFR 260.10).

- *EPA Identification Number* - the number assigned by USEPA to each generator, transporter, and treatment, storage, or disposal facility (40 CFR 260.10).

- *Equipment* - each valve, pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, or flange or other connector, and any control devices or systems required by this subpart (40 CFR 264.1031) **[Added April 1999]**.

- *Exempted Hazardous Waste Containers and Surface Impoundments* - containers and surface impoundments are exempt from these air emission requirements if the waste management unit is one of the following (40 CFR 264.1082(c) and 265.1083(c)) **[December 1997]**:
    1. containers and surface impoundments for which all hazardous wastes entering the unit has an average VO concentration at the point of waste origination is less than 500 ppmw. This determination is updated at least every 12 mo

2. containers and surface impoundments for which the organic content of all hazardous wastes entering the unit has been reduced by an organic destruction or removal process that achieves any of the following conditions:
   a. a process that removes or destroys the organics to a level such that the average VO concentration of the hazardous waste at the point of waste treatment is less than the exit concentration limit established for the process
   b. a process that removes or destroys the organics contained in the hazardous waste to such a level that the organic reduction efficiency for the process is equal to or greater than 95 percent, and the average VO concentration of the hazardous waste at the point of waste treatment is less than 100 ppmw
   c. a process that removes or destroys the organics contained in the hazardous waste to such a level that the actual organic mass removal rate for the process is greater than the required organic mass removal rate established for the process
   d. a biological process that destroys or degrades the organics contained in the hazardous waste such that either of the following is met:
      i. the organic reduction efficiency for the process is equal to or greater than 95 percent and the organic biodegradation efficiency for the process is equal to or greater than 95 percent
      ii. the total actual organic mass biodegradation rate for all hazardous waste treated by the process is equal to or greater than the required organic mass removal rate
   e. a process that removes or destroys the organics contained in the hazardous waste and meets all the following conditions:
      i. from the point of waste origination through the point where the hazardous waste enters the process, the hazardous waste is continuously managed in waste management units which use air emissions controls as applicable to the waste management unit
      ii. from the point of waste origination through the point where the hazardous waste enters the process, any transfer of the hazardous waste is accomplished through continuous hard-piping or other closed system transfer that does not allow exposure of the waste to the atmosphere
      iii. the average VO concentration of the hazardous waste at the point of waste treatment is less than the lowest average VO concentration at the point of waste origination determined for each of the individual hazardous waste streams entering the process or 500 ppmw, whichever value is lower
   f. a process that removes or destroys the organics contained in the hazardous waste to a level such that the organic reduction efficiency for the process is equal to or greater than 95 percent the owner/operator certifies that the average VO concentration at the point of waste origination for each of the individual waste streams entering the process is less than 10,000 ppmw
   g. a hazardous waste incinerator for which the owner/operator has either been issued a final permit or has certified compliance
   h. a boiler or industrial furnace for which the owner or operator has been issued a final permit or has certified compliance.
3. a surface impoundment used for biological treatment of hazardous waste such that it degrades or destroys the organics contained in the hazardous waste such that either of the following conditions is met:
   a. organic reduction efficiency for the process is equal to or greater than 95 percent and the organic biodegradation efficiency for the process is equal to or greater than 95 percent
   b. the total actual organic mass biodegradation rate for all hazardous waste treated by the process is equal to or greater than the required organic mass removal rate
4. containers or surface impoundments for which all hazardous waste placed in the unit either:

a. meets the numerical concentrations limits for organic hazardous constituents as specified in 40 CFR 280
b. has been treated by the treatment technology established by the USEPA in 40 CFR 268.42(a) or have been removed or destroyed by an equivalent method of treatment.

- *Exempted Hazardous Waste Management Unit* - in relation to air emissions standards, this is (40 CFR 264.1080(b)(1) and 265.1080(b)) **[Revised April 1999]:**
  1. a waste management unit that holds hazardous waste placed in the unit before 6 December 1996, and in which no hazardous waste is added to the unit on or after 6 December 1996
  2. a container that has a design capacity less than or equal to 0.1 m^3
  3. a tank in which an owner/operator has stopped adding hazardous waste and the owner/operator has begun implementing or completed closure pursuant to an approved closure plan
  4. a surface impoundment in which an owner/operator has stopped adding hazardous waste (except to implement an approved closure plan) and the owner/operator has begun implementing or completed closure pursuant to an approved closure plan
  5. a waste management unit that is used solely for the onsite treatment or storage of hazardous waste that is generated as the result of implementing remedial activities required under corrective action authorities
  6. a waste management unit that is used solely for the management of radioactive mixed waste in accordance with all applicable regulations under the *Atomic Energy Act* and the *Nuclear Waste Policy Act*
  7. a waste management unit that the owner or operator certifies is equipped with and operating air emissions controls in accordance with regulations promulgated as a result of the CAA
  8. a tank that has a process vent as defined in 40 CFR 264.1031.

- *Exempted Hazardous Waste Storage Tanks* - storage tanks are exempt from these air emission requirements if the waste management unit is one of the following (40 CFR 264.1082(c) and 265.1083(c)) **[December 1997]:**
  1. tanks for which all hazardous wastes entering the unit has an average VO concentration at the point of waste origination is less than 500 ppmw. This determination is updated at least every 12 mo.
  2. tanks for which the organic content of all hazardous wastes entering the unit has been reduced by an organic destruction or removal process that achieves any of the following conditions:
     a. a process that removes or destroys the organics to a level such that the average VO concentration of the hazardous waste at the point of waste treatment is less than the exit concentration limit established for the process
     b. a process that removes or destroys the organics contained in the hazardous waste to such a level that the organic reduction efficiency for the process is equal to or greater than 95 percent, and the average VO concentration of the hazardous waste at the point of waste treatment is less than 100 ppmw
     c. a process that removes or destroys the organics contained in the hazardous waste to such a level that the actual organic mass removal rate for the process is greater than the required organic mass removal rate established for the process
     d. a biological process that destroys or degrades the organics contained in the hazardous waste such that either of the following is met:
        i. the organic reduction efficiency for the process is equal to or greater than 95 percent and the organic biodegradation efficiency for the process is equal to or greater than 95 percent

ii. the total actual organic mass biodegradation rate for all hazardous waste treated by the process is equal to or greater than the required organic mass removal rate

e. a process that removes or destroys the organics contained in the hazardous waste and meets all the following conditions:
   i. from the point of waste origination through the point where the hazardous waste enters the process, the hazardous waste is continuously managed in waste management units which use air emissions controls as applicable to the waste management unit
   ii. from the point of waste origination through the point where the hazardous waste enters the process, any transfer of the hazardous waste is accomplished through continuous hard-piping or other closed system transfer that does not allow exposure of the waste to the atmosphere
   iii. the average VO concentration of the hazardous waste at the point of waste treatment is less than the lowest average VO concentration at the point of waste origination determined for each of the individual hazardous waste streams entering the process or 500 ppmw, whichever value is lower

f. a process that removes or destroys the organics contained in the hazardous waste to a level such that the organic reduction efficiency for the process is equal to or greater than 95 percent the owner/operator certifies that the average VO concentration at the point of waste origination for each of the individual waste streams entering the process is less than 10,000 ppmw

g. a hazardous waste incinerator for which the owner/operator has either been issued a final permit or has certified compliance

h. a boiler or industrial furnace for which the owner or operator has been issued a final permit or has certified compliance.

3. a tank used for biological treatment of hazardous waste such that it degrades or destroys the organics contained in the hazardous waste such that either of the following conditions is met:
   a. organic reduction efficiency for the process is equal to or greater than 95 percent and the organic biodegradation efficiency for the process is equal to or greater than 95 percent
   b. the total actual organic mass biodegradation rate for all hazardous waste treated by the process is equal to or greater than the required organic mass removal rate
4. tanks for which all hazardous waste placed in the unit either:
   a. meets the numerical concentrations limits for organic hazardous constituents as specified in 40 CFR 280
   b. has been treated by the treatment technology established by the USEPA or have been removed or destroyed by an equivalent method of treatment.

- *Existing Hazardous Waste Management (HWM) Facility or Existing Facility* - a facility which was in operation or for which construction commenced on or before 19 November 1980 (40 CFR 260.10).

- *Existing Portion* - the land surface area of an existing waste management unit, included in the original Part A permit application, on which wastes have been placed prior to the issuance of a permit (40 CFR 260.10).

- *Existing Tank System or Existing Component* - a tank system or component that is used for the storage or treatment of hazardous waste and that is in operation, or for which installation has commenced on or before 14 July 1986. Installations will have been considered to be commenced if the owner or operator has obtained all Federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system and if either (40 CFR 260.20):
   1. a continuous onsite physical construction of the site or installation program has begun

2. the owner or operator has entered into contractual obligations that cannot be canceled or modified without substantial loss for physical construction of the site or installation of the tank system to be completed within a reasonable time.

- *Explosives or Munitions Emergency* - a situation involving the suspected or detected presence of unexploded ordnance (UXO), damaged or deteriorated explosives or munitions, an improvised explosive device (IED), other potentially explosive material or device, or other potentially harmful military chemical munitions or device, that creates an actual or potential imminent threat to human health, including safety, or the environment, including property, as determined by an explosives or munitions emergency response specialist. Such situation may require immediate and expeditious action by an explosives or munitions emergency response specialist to control, mitigate, or eliminate the threat (40 CFR 260.10).

- *Explosives or Munitions Emergency Response* - all immediate response activities by an explosives and munitions emergency response specialist to control, mitigate, or eliminate the actual or potential threat encountered during an explosives or munitions emergency. An explosives or munitions emergency response may include in-place render safe procedures, treatment, or destruction of the explosives or munitions and/or transporting those items to another location to be rendered safe, treated, or destroyed. Any reasonable delay in the completion of an explosives or munitions emergency response caused by a necessary, unforeseen, or uncontrollable circumstance will not terminate the explosives or munitions emergency. Explosives and munitions emergency responses can occur on either public or private lands and are not limited to responses at RCRA facilities (40 CFR 260.10).

- *External Floating Roof* - a pontoon or double-deck type floating roof that rests on the surface of a hazardous waste being managed in a tank that has no fixed roof (40 CFR 265.1081).

- *Facility* - all contiguous land and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combination of them) (40 CFR 260.10).

- *Final Closure* - the closure of all hazardous waste management units at the facility in accordance with all applicable closure requirements so that hazardous waste management activities under 40 CFR 264 and 265 are no longer conducted at the facility unless subject to the provisions of 262.34 (40 CFR 260.10).

- *Fixed Roof* - a cover that is mounted on a unit in a stationary position and does not move with fluctuations in the level of the material managed in the unit (40 CFR 265.1081).

- *Floating Membrane Cover* - a cover consisting of a synthetic flexible membrane material that rests upon and is supported by the hazardous waste being managed in a surface impoundment (40 CFR 265.1081).

- *Floating Roof* - a cover consisting of a double deck, pontoon single deck, or internal floating cover which rests upon and is supported by the material being contained, and is equipped with a continuous seal (40 CFR 265.1081).

- *Food-Chain Crops* - tobacco, crops grown for human consumption, and crops grown for feed for animals whose products are consumed by humans (40 CFR 260.10).

- *Free Liquids* - liquids which readily separate from the solid portion of a waste under ambient temperature and pressure (40 CFR 260.10).

- *Freeboard* - the vertical distance between the top of a tank or surface impoundment dike, and the surface of the waste contained within it (40 CFR 260.10).

- *Generator* - any person, by site, whose act or process produces hazardous waste identified or listed in 40 CFR 261, or whose act first causes a hazardous waste to become subject to regulation (40 CFR 260.10). (NOTE: This typically is used to refer to a facility producing hazardous waste in quantities greater than 1000 kg/mo [2204.62 lb/mo].)

- *Groundwater* - water below the land surface in a zone of saturation (40 CFR 260.10).

- *Halogenated Organic Compounds (HOC)* - those compounds having a carbon-halogen bond which are listed in Appendix III or 40 CFR 268 (40 CFR 268.2).

- *Hazardous Debris* - debris that contains a hazardous waste listed in Subpart D or 40 CFR 261 or that exhibits a characteristic of hazardous waste identified in subpart C of 40 CFR 26. Any deliberate mixing of prohibited hazardous waste with debris that changes its treatment classificiation (i.e., from waste to hazardous debris) is not allowed under the dilution prohibition in 40 CFR 268.3 (40 CFR 268.2) **[Revised July 1999]**.

- *Hazardous Waste* - a solid waste identified as a characteristic or listed hazardous waste in 40 CFR 261.3 (40 CFR 260.10).

- *Hazardous Waste Constituent* - a constituent that caused the hazardous waste to be listed in 40 CFR 261, Subpart D (lists of hazardous wastes from nonspecific and specific sources, and listed hazardous wastes), or a constituent listed in the table of maximum concentrations of contaminants for the toxicity characteristic) (40 CFR 260.10).

- *Hazardous Waste Management Unit* - a contiguous area of land on or in which hazardous waste is placed, or the largest area in which there is significant likelihood of mixing hazardous waste constituents in the same area. Examples are a surface impoundment, a waste pile, a treatment area, a landfill cell, an incinerator, a tank and its associated piping and underlying containment system and a container storage area. A container alone does not constitute a unit; the unit includes containers and the land or pad upon which they are placed (40 CFR 260.10).

- *In Light Liquid Service* - the piece of equipment contains or contacts a waste stream where the vapor pressure of one or more of the organic components in the stream is greater than 0.3 kPa at 20 °C, the total concentration of the pure organic components having a vapor pressure greater than 0.3 kPa at 20 °C is equal to or greater than 20 percent by weight, and the fluid is a liquid at operating conditions (40 CFR 264.1031) **[December 1997]**.

- *In Light Material Service* - the container is used to manage a material for which both of the following conditions apply (40 CFR 265.1081):
    1. the vapor pressure of one or more of the organic constituents in the material is greater than 0.3 kPa at 20 °C
    2. the total concentration of the pure organic constituents having a vapor pressure greater than 0.3 kPa at 20 °C is equal to or greater than 20 percent by weight.

- *Incinerator* - an enclosed device that (40 CFR 260.10):
    1. uses controlled flame combustion and neither meets the criteria for classification as a boiler, sludge dryer, or carbon regeneration unit, nor is listed as an industrial furnace
    2. meets the definition of infrared incinerator or plasma arc incinerator.

- *Incompatible Waste* - a hazardous waste that is unsuitable for (40 CFR 280.10):
    1. placement in a particular device or facility because it may cause corrosion or decay of containment materials (e.g., container liners or tank walls)
    2. commingling with another waste or material under uncontrolled conditions because the commingling conditions produce heat or pressure, fire or explosion, violent reaction, toxic dusts, mist, fumes or gases, or flammable fumes or gases.

- *Individual Generation Site* - the contiguous site at or on which one or more hazardous waste(s) is generated. An individual generation site, such as a large manufacturing plant, may have one or more sources of hazardous waste, but is considered a single or individual generation site if the site or property is contiguous (40 CFR 260.10).

- *In-Ground Tank* - a device meeting the definition of tank in 40 CFR 260.10 whereby a portion of the tank is situated to any degree within the ground, thereby preventing visual inspection of that external surface area of the tank that is in the ground (40 CFR 260.10).

- *Inner Liner* - a continuous layer of material placed inside a tank or container which protects the construction materials of the tank or container from the contained waste or reagents used to treat the waste (40 CFR 260.10).

- *Land Disposal* - placement in or on the land, except in a corrective action management unit, and includes, but is not limited to, placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, underground mine or cave, or placement in a concrete vault, or bunker intended for disposal purposes (40 CFR 268.2).

- *Land Treatment Facility* - a facility, or part of a facility, at which hazardous waste is applied onto or incorporated into the soil surface; such facilities are disposal facilities if the waste will remain after closure (40 CFR 260.10).

- *Large Quantity Generator* - see *Generator.*

- *Large Quantity Handler of Universal Waste* - a universal waste handler who accumulates 5000 kg [11,111 lb] or more total of universal waste (batteries, pesticides, or thermostats, calculated collectively) at any time. This designation as a large quantity handler of universal waste is retained through the end of the calendar year in which 5000 kg [11,111 lb] or more total of universal waste is accumulated (40 CFR 273.6).

- *Leak Detection System* - a system capable of detecting the failure of either the primary or secondary containment structure or the presence of a release of hazardous waste or accumulated liquid in the secondary structure. Such a system must employ operational controls (e.g., visual inspections for releases into the secondary containment system of aboveground tanks) or consist of an interstitial monitoring device designed to detect continuously and automatically the failure of the primary or secondary containment structure or the presence of a release of hazardous waste into the secondary containment structure (40 CFR 260.10).

- *Liner* - a continuous layer of natural or manmade materials, beneath or on the sides of a surface impoundment, landfill, or landfill cell, which restricts the downward or lateral escape of hazardous waste, hazardous waste constituents, or leachate (40 CFR 260.10).

- *Management or Hazardous Waste Management* - the systematic control of the collection, source separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous waste (40 CFR 260.10).

- *Malfunction* - any sudden, infrequent, and not reasonably preventable failure or air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operations are not malfunctions (40 CFR 265.1081).

- *Management Practice (MP)* - practices which, although not mandated by law, are encouraged to promote safe operating procedures.

- *Manifest* - the shipping document originated and signed by the generator containing the information required by 40 CFR 262, Subpart B (40 CFR 260.10).

- *Manifest Document Number* - the USEPA 12-digit number assigned to the generator plus a unique 5 digit number assigned to the Manifest by the generator for recording and reporting purposes (40 CFR 260.10).

- *Military Munitions* - all ammunition products and components produced or used by or for the U.S. DOD or the U.S. Armed Services for national defense and security, including military munitions under the control of the DOD, the Coast Guard, the DOE, and National Guard personnel. The term military munitions includes: confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes and incendiaries used by DOD components, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof. Military munitions do not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components thereof. However, the term does include non-nuclear components of nuclear devices, managed under DOEs nuclear weapons program after all required sanitization operations under the *Atomic Energy Act of 1954*, as amended, have been completed (40 CFR 260.10).

- *Movement* - that hazardous waste transported to a facility in an individual vehicle (40 CFR 260.10).

- *New Tank System or New Component System* - a tank system or component that will be used for the storage and treatment of hazardous waste and for which installation has commenced after 14 July 1986, except however, for purposes of 264.193(g)(2) and 265.193(g)(2), a new tank system is one for which construction commenced after 14 July 1986 (see also existing tank system) (40 CFR 260.10).

- *No Detectable Organic Emissions* - no escape of organics to the atmosphere as determined by using the procedures specified in 40 CFR 265.1084(d) (40 CFR 265.1081).

- *Nonwastewaters* - wastes that do not meet the criteria for wastewaters (40 CFR 268.2).

- *Onground Tank* - a device meeting the definition of tank in 40 CFR 260.10 and that is situated in such a way that the bottom of the tank is on the same level as the adjacent surrounding surface so that the external tank bottom cannot be visibly inspected (40 CFR 260.10).

- *Onsite* - the same or geographically contiguous property which may be divided by a public or private right-of-way, provided the entrance and exit between the properties is at a crossroads intersection, and access is by crossing as opposed to going along the right-of-way. Non-contiguous properties owned by the same person but connected by a right-of-way which he controls and to which the public does not have access is also considered onsite property (40 CFR 260.10).

- *Open Burning* - the combustion of any material without the following characteristics (40 CFR 260.10):
    1. control of combustion air to maintain adequate temperature for efficient combustion
    2. containment of the combustion-reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion
    3. control of emission of the gaseous combustion products.

- *Ordnance* - See Waste Explosives.

- *Partial Closure* - the closure of a hazardous waste management unit in accordance with the applicable closure requirements of 40 CFR 264 and 265 at a facility that contains other active hazardous waste management units. For example, partial closure may include the closure of a tank (including its associated piping and underlying containment systems) while other units of the same facility continue to operate (40 CFR 260.10).

- *Pesticides* - any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or desiccant, other than any article that either (40 CFR 262.10 and 273.6):
    1. is a new animal drug under FFDCA Section 201(w)
    2. is an animal drug that has been determined by regulation of the Secretary of Human Health and Human Services not to be a new animal drug
    3. is an animal feed under FFDCA section 201(x) that bears or contains any substances described by paragraph 1 or 2 of this definition.

  Pesticides which are regulated as universal wastes include pesticides that are either (40 CFR 273.3(a):
    1. recalled pesticides that are stocks of a suspended and canceled pesticide that are a part of a voluntary or mandatory recall under FIFRA Section 19(b), including, but not limited to, those owned by the registrant responsible for conducting the recall
    2. recalled pesticide that are stocks of suspended or canceled pesticides, or a pesticide that is not in compliance with FIFRA, that are part of a voluntary recall by the registrant
    3. stocks of other unused pesticide products that are collected and managed as a part of a waste pesticide collection.

  Pesticides which are not universal wastes include (40 CFR 273.3(b):
    1. the following pesticides when disposed of on a farmers own farm in a manner consistent with the label, and the container is triple rinsed:
        a. suspended or recalled pesticides that are a part of a voluntary or mandatory recall under FIFRA Section 19(b), including, but not limited to, those owned by the registrant responsible for conducting the recall
        b. stocks of suspended or canceled pesticide products that are not in compliance with FIFRA and are part of a voluntary recall by the registrant
        c. stocks of other unused pesticide products
    2. pesticides not meeting the definition of a universal waste
    3. pesticides that are not wastes under 40 CFR 261, including those who do not meet the criteria for waste generation or those that are not wastes (see the definition of Waste Pesticide)
    4. pesticides that are not a hazardous waste.

- *Point of Waste Treatment* - the point where a hazardous waste exits a waste management unit used to destroy, degrade, or remove organics in the hazardous waste (40 CFR 265.1081).

- *Publicly Owned Treatment Works (POTW)* - any device or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is

owned by a state or municipality (as defined by section 502(4) of the CWA). This definitions includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment (40 CFR 260.10).

- *Pump Operating Level* - a liquid level proposed by the owner or operator and approved by the Regional Administrator based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump (40 CFR 264.226(d)(3)).

- *Qualified Groundwater Scientist* - a scientist or engineer who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields as may be demonstrated by state registration, professional certification, or completion of accredited university courses that enable that individual to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport (40 CFR 260.10).

- *Representative Sample* - a sample of a universe or whole (e.g., waste pile, lagoon, groundwater) which can be expected to exhibit the average properties of the universe or whole (40 CFR 260.10).

- *Restricted Wastes* - those categories of hazardous wastes that are prohibited from land disposal either by regulation or by statute, in other words, a hazardous waste that is restricted no later than the date of the deadline established in RCRA Section 3004 (40 CFR 268).

- *Runoff* - any rainwater, leachate, or other liquid that drains over land from any part of a facility (40 CFR 260.10).

- *Run-on* - any rainwater, leachate, or other liquid that drains over land onto any part of a facility (40 CFR 260.10).

- *Sludge* - any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant (40 CFR 260.10).

- *Small Quantity Generator* - a generator who generates less than 1000 kg [2204.62 lb] or hazardous waste in a calendar month but more than 100 kg [220.46 lb] (40 CFR 260.10).

- *Small Quantity Handler of Universal Waste* - a universal waste handler (as defined in this section) who does not accumulate 5000 kg or more total of universal waste (batteries, pesticides, or thermostats, calculated collectively) at any time (40 CFR 273.6 **[Revised January 1999]**.

- *Soil* - unconsolidated earth material composing the superficial geologic strata (material overlying bedrock), consisting of clay, silt, sand, or gravel size particles as classified by the U.S. Natural Resources Conservation Service, or a mixture of such materials with liquids, sludges or solids which is inseparable by simple mechanical removal processes and is made up primarily of soil by volume based on visual inspection. Any deliberate mixing of prohibited hazardous waste with soil that changes its treatment classification (i.e., from waste to contaminated soil) is not allowed under the dilution prohibition in 40 CFR 268.3 (40 CFR 268.2) **[Added July 1999]**.

- *Storage* - the holding of hazardous wastes for a temporary period, at the end of which the hazardous wastes are treated, disposed of, or stored elsewhere (40 CFR 260.10).

- *Sump* - any pit or reservoir that meets the definition of tank and those troughs/trenches connected to it that serve to collect hazardous waste for transport to hazardous waste TSDFs

except that as used in the landfill, surface impoundment, and waste pile rules, *sump* means any lined pit or reservoir that serves to collect liquids drained from a leachate collection and removal system or leak detection system for subsequent removal from the system (40 CFR 260.10).

- *Tank* - a stationary device designed to contain an accumulation of hazardous waste that is constructed primarily of nonearthen materials (e.g., wood, concrete, steel, plastic) which provide structural support (40 CFR 260.10).

- *Tank System* - a hazardous waste storage or treatment tank and its associated ancillary equipment and containment system (40 CFR 260.10).

- *Thermostat* - a temperature control device that contains metallic mercury in an ampule attached to a bimetal sensing element, and mercury-containing ampules that have been removed from these temperature control devices in compliance with the requirements of 40 CFR 273.12(c)(2) or 273.33(c)(2) (40 CFR 262.10 and 273.6).

  The following are exempted from the definition of thermostat in relation to universal waste (40 CFR 273.4(b)):
  1. thermostats that are not yet wastes under 40 CFR 261 (see the definition of Waste Thermostat)
  2. thermostats that are not hazardous waste.

- *Transfer Facility* - any transportation related facility including loading docks, parking areas, storage areas, and other similar areas where shipments of hazardous wastes are held during the normal course of transportation (40 CFR 260.10).

- *Transport Vehicle* - a motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (trailer, railroad freight car, etc.) is a separate transport vehicle (40 CFR 260.10).

- *Transporter* - a person engaged in the offsite transportation of hazardous wastes by air, rail, highway, or water (40 CFR 260.10).

- *Treatability Study* - a study in which a hazardous waste is subjected to a treatment process to determine (40 CFR 260.10):
  1. whether the waste is amenable to the treatment process
  2. what pretreatment (if any) is required
  3. the optimal process conditions needed to achieve the desired treatment
  4. the efficiency of a treatment process for a specific waste or wastes
  5. the characteristics and volumes of residuals from a particular treatment process.

  Also included in this definition for the purpose of the 261.4(e) and (f) exemptions are liner compatibility, corrosion, and other material compatibility studies and toxicological and health effects studies. A treatability study is not a means to commercially treat or dispose of hazardous waste.

- *Treatment* - any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste nonhazardous, or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume (40 CFR 260.10).

- *Underground Tank* - a device meeting the definition of tank in 40 CFR 260.10 whose entire surface area is totally below the surface and covered by the ground (40 CFR 260.10).

- *Unexploded Ordnance (UXO)* - military munitions that have been primed, fused, armed, or otherwise prepared for action, and have been fired, dropped, launched, projected, or placed in a such a manner as to constitute a hazard to operations, installation, personnel, or material and remain unexploded either by malfunction, design, or any other cause (40 CFR 266.201).

- *Unfit-for-Use Tank System* - a tank system that has been determined through an integrity assessment or other inspection to be no longer capable of storing or treating hazardous waste without posing a threat of release of hazardous waste to the environment (40 CFR 260.10).

- *Universal Waste* - any of the following hazardous wastes that are managed under the universal waste requirements of 40 CFR 273 (40 CFR 262.10 and 273.6):
    1. batteries as described in 40 CFR 273.2 (see definition of battery)
    2. pesticides as described in 40 CFR 273.3 (see definition of pesticides)
    3. thermostats as described in 273.4 (see definition of thermostats).

- *Universal Waste Handler* - this term means (40 CFR 262.10 and 273.6):
    1. a generator of universal waste
    2. the owner or operator of a facility, including all contiguous property, that receives universal waste from other universal waste handlers, accumulates universal waste, and sends universal waste to another universal waste handler, to a destination facility, or to a foreign destination.

  It does not mean:
    1. a person who treats, (except under the provisions of 40 CFR 273.13(a) or (c), or 273.33(a) or (c)), disposes of, or recycles universal waste
    2. a person engaged in offsite transportation of an universal waste by air, rail, highway, or water, including a universal waste transfer facility.

- *Universal Waste Transfer Facility* - any transportation related facility including loading docks, parking areas, storage areas, and other similar areas where shipments of universal waste are held during the normal course of transportation for 10 days or less (40 CFR 273.6).

- *Universal Waste Transporter* - a person engaged in the offsite transportation of universal waste by air, rail, highway, or water (40 CFR 260.10 and 273.6).

- *Uppermost Aquifer* - the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary (40 CFR 260.10).

- *Volatile Organic (VO) Concentration* - the fraction by weight of the volatile organic compounds in a hazardous waste expressed in terms of ppmw as determined by direct measurement or by knowledge of the waste (40 CFR 265.1081).

- *Waste Battery* - a used battery becomes a waste on the date that it is discarded (e.g., when sent for reclamation). An unused battery becomes a waste on the date the handler decides to discard it. See also the definition of Battery (40 CFR 273.2(c)).

- *Waste Explosives* - waste that has the potential to detonate and bulk military propellants that cannot be safely disposed of through other modes of treatment (40 CFR 265.382).

- *Waste Military Munitions* - a military munition is not a solid waste when (40 CFR 266.202):
    1. used for its intended purpose, including:

a. use in training military personnel or explosives and munitions emergency response specialists (including training in proper destruction of unused propellant or other munitions
b. use in research, development, testing, and evaluation of military munitions, weapons, or weapon systems
c. recovery collection, and on range destruction of unexploded ordnance and munitions fragments during range clearance activities at active or inactive ranges. However, "use for intended purposes" does not include the on-range disposal or burial of unexploded ordnance and contaminants when the burial is not a result of product use.

2. an unused munition, or component thereof, is being repaired, reused, recycled, reclaimed, disassembled, reconfigured, or otherwise subjected to materials recovery activities, unless such activities involve use constituting disposal or burning for energy recovery.

An unused military munition is a solid waste when any of the following occurs:

1. the munition is abandoned by being disposed of, burned, detonated (except during intended use), incinerated, or treated prior to disposal
2. the munition is removed from storage in a military magazine or other storage area for the purpose of being disposed of, burned, or incinerated, or treated prior to disposal
3. the munition is deteriorated or damaged (e.g., the integrity of the munition is compromised by cracks, leaks, or other damage) to the point that it cannot be put into serviceable condition, and cannot reasonably be recycled or used for other purposes
4. the munition has been declared a solid waste by an authorized military official.

A used or fired military munition is a solid waste:

1. when transported off range or from the site of use, where the site of use is not a range, for the purpose of storage, reclamation, treatment, disposal, or treatment prior to disposal
2. if recovered, collected, and then disposed of by burial, or landfilling either on or off a range.

- *Waste Pesticides* - this term applies as follows (40 CFR 273.3(c)):
  1. a recalled pesticide becomes a waste on the first date on which both of the following conditions apply:
     a. the generator of the recalled pesticide agrees to participate in the recall
     b. the person conducting the recall decides to discard (e.g., burn the pesticides for energy recovery) the pesticides
  2. stocks of unused pesticide products that are collected and managed as part of a waste pesticide collection program becomes a waste on the day the generator decides to discard it.

  The following pesticides are not waste (40 CFR 273.3(d)):
  1. recalled pesticides providing the person conducting the recall:
     a. has not made a decision to discard (e.g., burn for energy recovery) the pesticide
     b. has made a decision to use a management option that, under 40 CFR 261.2, does not cause the pesticide to be a solid waste (i.e., the selected option is use (other than use constituting disposal), or reuse, or reclamation)
  2. unused pesticide products that are collected and managed as a part of a waste pesticide collection program if the generator of the unused pesticide product has not decided to discard (e.g., burn for energy recovery) them.

- *Waste Stabilization Process* - any physical or chemical process used to either reduce the mobility of hazardous constituents in a hazardous waste or eliminate free liquids (40 CFR 265.1081).

- *Waste Thermostats* - A used thermostat becomes a waste on the date it is discarded (e.g., sent for reclamation). An unused thermostat becomes a waste on the date the handler decides to discard it (40 CFR 273.4(c)).

- *Wastewater Treatment Unit* - a device that is part of a wastewater treatment facility subject to regulation under section 402 or 307(b) of the CWA and receives and treats or stores an influent wastewater that is a hazardous waste (as defined in 40 CFR 261.3), or that generates and accumulates a wastewater treatment sludge that is a hazardous waste, or treats or stores a wastewater treatment sludge and meets the definition of tank or tank system (40 CFR 260.10).

- *Wastewaters* - wastes that contain less than 1 percent by weight total organic compounds and less than 1 percent by weight total suspended solids (TSS) with certain exceptions (40 CFR 268.2).

- *Zone of Engineering Control* - an area under the control of the owner/operator that upon detection of a hazardous waste release, can be readily cleaned up before the release of hazardous waste or hazardous constituents to groundwater or surface water (40 CFR 260.10).

HAZARDOUS WASTE MANAGEMENT

GUIDANCE FOR CHECKLIST USERS

	REFER TO CHECKLIST ITEMS:
All Facilities	HW.1.1 through HW.1.6
All Sizes of Generators	HW.10.1 through HW.10.7
Conditionally Exempt Small Quantity Generators (CESQGs)	HW.15.1 through HW.15.10
Small Quantity Generators (SQGs)	
General	HW.20.1 through HW.20.5
Personnel Training	HW.25.1 through HW.25.3
Containers	HW.30.1 through HW.30.4
Satellite Accumulation Points	HW.35.1
Container Storage Areas	HW.40.1 through HW.40.3
Storage Tanks	HW.42.1 through HW.42.3
Disposal of Restricted Waste	HW.45.1 through HW.45.5
Generators	
General	HW.55.1 through HW.55.7
Personnel Training	HW.60.1 and HW.60.2
Contingency Plans and Emergency Coordinators	HW.65.1 through HW.65.4
Containers	HW.70.1 through HW.70.10
Satellite Accumulation Points	HW.75.1
Container Storage Areas	HW.80.1 through HW.80.4
Emissions from Process Vents	HW.85.1 through HW.85.6
Air Emission Standards for Equipment Leaks	HW.90.1 through HW.90.10
Storage Tanks	HW.95.1 through HW.95.11
Storage Tank Emissions	HW.100.1 through HW.100.9
Containment Buildings	HW.105.1 through HW.105.7
Disposal of Restricted Waste	HW.110.1 through HW.110.6
Transportation of Hazardous Waste	HW.120.1 through HW.120.5
Military Munitions	HW.122.1 through HW.122.4
Small Quantity Universal Waste Handlers	
General	HW.125.1 through HW.125.3
Specific Wastes	HW.130.1 through HW.130.5
Personnel Training	HW.135.1
Containers	HW.140.1
Transportation	HW.150.1 and HW.150.2
Large Quantity Universal Waste Handler	
General	HW.155.1 through HW.155.3
Specific Wastes	HW.160.1 through HW.160.5
Personnel Training	HW.165.1

	REFER TO CHECKLIST ITEMS:
Containers	HW.170.1
Notification	HW.175.1
Transportation	HW.180.1 through HW.180.3
Universal Waste Transporter	HW.185.1 through HW.185.6
Universal Waste Destination Facilities	HW.190.1 through HW.190.3
Cleanup Sites	
General	HW.200.1 through HW.200.6
Administrative Record	HW.205.1 and HW.205.2
Community Relations	HW.210.1 through HW.210.5
NPL Sites	HW.215.1 and HW.215.2

Records To Review [Revised January 1999]

Generator (including TSDFs if they are also generators)

- Notification (USEPA identification number)
- Hazardous waste manifests
- LDR Restriction Notification Forms
- Manifest exception reports
- Biennial reports
- Inspection Logs (as applicable)
- Delistings
- Land disposal restriction certifications
- Employee training documentation
- Contingency plan
- Notifications of hazardous waste oil fuel marketing or blending activity

Physical Features To Inspect [Revised January 1999]

- Disposal sites
- Accumulations points
- Incinerators
- Vehicles used for transport
- Storage facilities (including drums)
- Surface impoundments
- OB/OD sites
- Treatment units
- Generation sites
- Satellite accumulation points
- Recycling sites

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
HW.1 **ALL FACILITIES**	
HW.1.1. The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/ identifying information as the citation).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, interagency agreements, or equivalent state enforcement actions.
HW.1.2. FWS facilities are required to comply with state and local regulations and compliance agreements negotiated with Federal, state, and local governments (EO 12088, Section 1-1; *Federal Facilities Compliance Act,* Section 102).	Verify that the facility is complying with state and local hazardous waste requirements. Verify that the facility is operating according to permits issued by the state or local agencies where approved. (NOTE: Issues typically regulated by state and local agencies include: – additional manifesting requirements – more frequent reporting requirements – transportation – identification of special waste or waste categories – regulation of specific substances as hazardous waste such as: medical, pathological, and infectious waste; used oil; explosives; used batteries – small and very small quantity generator requirements – RCRA permitting of oil/water separators – disposal requirements – construction and operation of storage and disposal facilities – satellite accumulation point requirements – container marking and labeling requirements.) Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreements.

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HW.1.3. Facilities are required to meet regulatory and FWS requirements issued since the finalization of the handbook (a finding under this checklist item will have the citation of the new regulations as a basis of finding).	Determine if any new regulations concerning hazardous waste have been issued since the finalization of the handbook. Verify that the facility is in compliance with newly issued regulations.
HW.1.4. FWS facilities should report all NOVs to the Region and Environmental and Facility Compliance (EFC) (MP) **[Revised June 1998].**	Determine if the facility has received an NOV relating to hazardous waste. Verify that the NOV was reported to the Region and the EFC.
HW.1.5. Specific persons should be designated responsible for areas where hazardous waste is stored, and the precise nature of their responsibilities should be specified (MP).	Verify that specific individuals have been designated responsible for hazardous waste storage areas. Verify that the individuals designated responsible for hazardous waste storage areas are aware of the precise nature of their responsibilities.
HW.1.6. FWS facilities should report spills of hazardous waste to the Region and Environmental and Facility Compliance (EFC) (MP) **[Revised June 1998].**	Verify that FWS facilities report spills of hazardous waste to the Region and the EFC. (NOTE: Use the reportable quantity (RQ) as the baseline for reporting, see Appendix 3-1 in Hazardous Materials Management.)

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
HW.10 **ALL SIZES OF GENERATORS**	

HW.10.1. Federal facilities that generate solid wastes must determine if the wastes are hazardous wastes (40 CFR 261.3, 261.4(b), 261.21 through 261.24, and 262.11) **[Revised April 1999]**.	(NOTE: Determination of whether or not a waste is a hazardous waste can be done through one of the following:
	– knowledge of all the constituents of the waste (MSDSs) and whether it is listed in 40 CFR 261
	– laboratory analysis
	– knowledge of processes and/or materials used.)
	
	(NOTE: Unidentified waste materials and spilled hazardous materials may have to be disposed of as hazardous waste depending on their constituents or characteristics.)
	
	(NOTE: Some batteries, pesticides, and thermostats may be considered universal wastes instead of hazardous wastes and need to be handled according to the requirements in 40 CFR 273 (see the appropriate definitions for clarification.)
	
	Discuss with staff how wastes generated are identified and classified.
	
	Determine if USEPA criteria were followed for identifying the characteristics of hazardous waste and USEPA's listed wastes in 40 CFR 261 (see Appendices 4-1, 4-2, 4-3, and 4-4).
	
	Determine whether the Federal facility generates, transports, treats, stores, or disposes of any hazardous waste (see Appendices 4-1, 4-2, 4-3, and 4-4 for guidance) and the quantity.
	
	(NOTE: The following solid wastes are not considered to be hazardous wastes:
	– household waste
	– solid wastes that are generated by any of the following and are returned to the soils as fertilizers:
	  – growing and harvesting of agricultural crops
	  – raising of animals, including animal manures
	  – mining overburden returned to the mine site
	– fly ash waste, bottom ash waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels except for Federal facilities that burn hazardous waste
	– drilling fluids, produced waters, and other wastes affiliated with the explorations, development, or production of crude oil, natural gas, or geothermal energy

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	– wastes that fail the test for the toxicity characteristic because chromium is present or are listed in Subpart D because of the presence of chromium, that do not fail the test for toxicity characteristics for any other constituent or are not listed due to the presence of any other constituent, and that do not fail the test for other characteristics (see 40 CFR 261.4(b) for a listing of types of industries generating this type of waste that receive exclusions) – solid waste from the extraction, beneficiation, and processing of ores and minerals (including coal, phosphate rock, and overburden) from the mining of uranium ore. There is an exception to this for facilities that burn or process hazardous waste – cement kiln dust waste, except for facilities that burn or process hazardous waste – solid waste that consists of discarded arsenic-treated wood or wood products that fail the test for toxicity characteristics for hazardous waste codes D004 through D017 and that is not a hazardous waste for any other reason if the waste is generated by persons who utilize the arsenic-treated wood and wood products for those materials' intended end use – petroleum contaminated media and debris that fail the test for toxicity characteristics (hazardous waste codes D018 through D043 only) and are required to meet the corrective action regulations under 40 CFR 280 – used chlorofluorocarbon refrigerants from totally enclosed heat transfer equipment, including mobile air-conditioning systems, mobile refrigeration and commercial and industrial air-conditioning and refrigeration systems that use chlorofluorocarbons as the heat transfer fluid in a refrigeration cycle, provided that the refrigerant is reclaimed for further use – non-terne plated used oil filters that are not mixed with a listed hazardous waste if these oil filters have been gravity hot-drained using one of the following methods: – puncturing the filter anti-drain back valve or the filter dome end and hot-draining – hot-draining and crushing – dismantling and hot-draining – any other equivalent hot-draining method that will remove used oil – used oil re-refining distillation bottoms that are used as feedstock to manufacture asphalt products – leachate or gas condensate collected from landfills where certain solid wastes have been disposed, provided that: – the solid wastes disposed would meet one or more of the listing descriptions for Hazardous Waste Codes K169, K170,

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	K171, and K172 if these wastes had been generated after 8 February 1999 – the solid wastes were disposed prior to the effective date of the listing – the leachate or gas condensate do not exhibit any characteristic of hazardous waste nor are derived from any other listed hazardous waste – discharge of the leachate or gas condensate, including leachate or gas condensate transferred from the landfill to a POTW by truck, rail, or dedicated pipe, is subject to regulation under sections 307(b) or 402 of the CWA. (NOTE: After 13 February 2001, leachate or gas condensate will no longer be exempt if it is stored or managed in a surface impoundment prior to discharge. There is one exception: if the surface impoundment is used to temporarily store leachate or gas condensate in response to an emergency situation (e.g., shutdown of wastewater treatment system), provided the impoundment has a double liner, and provided the leachate or gas condensate is removed from the impoundment and continues to be managed in compliance after the emergency ends.) Verify that listed wastes are tested for reactivity, corrosivity, ignitability, and toxicity characteristics. Verify that all data used for determination, including quality assurance data, is maintained and kept available for reference or inspection.
HW.10.2. Facilities which claim that a particular material is not a solid waste or is conditionally exempt from regulation as a hazardous waste are required to provide specific documentation (40 CFR 261.2(f)).	Determine if the facility has any wastes that are typically handled as hazardous waste that it claims are exempt. (NOTE: This typically includes items that are recycled such as batteries, waste antifreeze, solvents, and in some states used oil.) Verify that, for these wastes, the facility can demonstrate that there is a known market or disposition for the material and that they meet the terms of the exclusion or exemption. Verify that documentation is provided that indicates the material is not a waste, or is exempt from regulation. (NOTE: One example of documentation are contracts showing that a second person uses the material as an ingredient in a production process.) Verify that, if the facility is claiming to recycle material, the equipment

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	for the recycling is actually at the facility and in working order.
HW.10.3. Areas where containers of hazardous waste are stored should have secondary containment (MP).	Verify that the areas where containers of hazardous waste are stored have secondary containment such as a berm, dike, containment pallet, or other facility to prevent leakage to the environment.
HW.10.4. Checklist item deleted **[July 1997].**	
HW.10.5. Empty containers previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).	Verify that, for containers or inner liners holding hazardous wastes, one of the following is done: – wastes are removed that can be removed using common practices and no more than 2.5 cm [1 in.] of residue remains – if the container is less than or equal to 110 gal, no more than 3 percent by weight of total container capacity remains – when the container is greater than 110 gal, no more than 0.3 percent by weight of the total container capacity remains. Verify that, for containers which hold a compressed gas, the pressure in the container approaches atmosphere. Verify that, for containers or inner liners which held an acute hazardous waste listed in Appendix 4-4, one of the following is done: – it is triple rinsed – it is cleaned by another method identified through the literature or testing as achieving equivalent removal – the inner liner is removed. Verify that the rinsate has been disposed of as necessary according to its properties and possible classification as an hazardous waste. (NOTE: Some states require a treatment permit when returning compressed gas cylinders and aerosol cans to atmospheric.)
HW.10.6. Facilities that generate hazardous waste	Verify that field stations maintain the following records:

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are required to maintain specific records for hazardous waste management (RP, 561 FW 6.6C(2) and 6.9A(1) through 6.9A(9)) **[Citation Revised June 1998]**.	– a hazardous waste inventory – the USEPA and DOT identification numbers and waste descriptions – the known hazard of the waste – quantity generated in a month – location of the hazardous waste generation – type of storage (container, UST, AST, or other type of storage) – quantity of waste stored at one time and the location of the storage area – the amount of time the hazardous waste can be stored depending on generator status – all records to include manifests – the current removal/disposal practice for each waste.
HW.10.7. Facilities with personnel exposed to injurious corrosive materials must have emergency use facilities available (29 CFR 1910.151(c)) **[Added July 1999]**.	Verify that, where the eyes and body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body are provided within the work area for immediate emergency use.

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HW.15 **CONDITIONALLY EXEMPT SMALL QUANTITY GENERATORS (CESQGs)**	
HW.15.1. Generators of no more than 100 kg/mo [≈ 220 lb/mo] of hazardous waste may qualify as CESQGs when they meet specific requirements (40 CFR 261.5) **[Revised June 1998].**	Verify that the following quantity and storage limitations are met: – no more than 100 kg [≈ 220 lb] of hazardous waste is generated in a calendar month – total onsite accumulation does not exceed more than 1000 kg [2204.62 lb] of hazardous waste – no more than 1 kg [≈ 2 lb] of acute hazardous waste (see Appendix 4-4) is generated in a calendar month – no more than a total of 100 kg [≈ 220 lb] of any residue or contaminated soil, waste, or other debris resulting from the cleanup of any acute wastes in a calendar month is generated. (NOTE: When making quantity determinations, all hazardous waste generated must be included except hazardous waste that is: – exempt from regulation under 40 CFR 261.4(c) through (f), 261.6(a)(3), 261.7(a)(1), or 261.8 – managed immediately upon generation only in onsite elementary neutralization units, wastewater treatment units, or totally enclosed treatment facilities – recycled, without prior storage or accumulation, in an onsite process – used oil managed under 40 CFR 261.6(a)(4) and 40 CFR 279 – universal waste managed under 40 CFR 273.) Verify that wastes are either treated or disposed of in an onsite facility or delivered to an offsite TSDF, either of which is one of the following: – permitted – in interim status – authorized to manage hazardous waste by a state with an approved hazardous waste management program – permitted, licensed, or registered by a state to manage municipal or industrial solid waste – a facility that does one of the following: – beneficially uses or reuses, or legitimately recycles or reclaims, its waste

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	– treats waste prior to beneficial use or reuse, or legitimate recycling or reclamation – a universal waste handler or a destination facility for universal waste. (NOTE: A permitted TSF should be permitted to receive hazardous waste from a CESQG.) (NOTE: If a hazardous waste generator meets the requirements for being a CESQG, they are not required to meet any of the standards outlined in 40 CFR 262 through 266, (except 262.11), 268, and 270.) (NOTE: If a CESQG mixes its waste with used oil, the mixture is subject to the requirements in Subpart G, 40 CFR 279 if the mixture is destined to be burned for energy recovery.) (NOTE: Quantities of acute hazardous waste greater than listed amounts are required to be handled according to the standards in 40 CFR 262 through 266, 268, 270, and 124.) (NOTE: Even though a CESQG is not legally required to use a manifest or obtain a hazardous waste identification number, many hazardous waste haulers will not transport hazardous waste from a facility without a manifest or identification number.)
HW.15.2. CESQG personnel who handle hazardous waste are required to meet certain training requirements (RP, 561 FW 6.9C(3)) **[Citation Revised June 1998].**	Verify that the training program is directed by a person trained in hazardous waste management procedures. Verify that the training program coincides with the hazard communication program and includes the following: – response to fire or explosion – response to leaks or spills – waste turn-in procedures – identification of hazardous wastes – container use, marking, labeling, and onsite transportation – manifesting and offsite transportation – personnel health and safety and fire safety – facility shutdown procedures. Verify that new employee training is completed within 6 mo of employment. Verify that an annual review of initial training is provided. Verify that employees do not work unsupervised until training is

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	completed. Verify specifically that accumulation point managers and hazardous waste handlers have been trained.
HW.15.3. Training records must be maintained for all CESQG staff who manage hazardous waste (MP).	Examine training records and verify that they include the following: – job title and description for each employee by name – written description of how much training each position will obtain – documentation of training received by name. Determine if training records are retained for 3 yr after employment at the facility terminates or until closure of the facility.
HW.15.4. Containers used to store hazardous waste at CESQGs must be in good condition and not leaking (RP, 561 FW 6.7E(2)(b)(iii)) **[Citation Revised June 1998]**	Verify that containers are not leaking, bulging, rusting, damaged, or dented. Verify that waste is transferred to a new container or managed in another appropriate manner when necessary.
HW.15.5. Containers used at CESQGs must be made of or lined with materials compatible with the waste stored in them (RP, 561 FW 6.7E(2)(b)(iv)} **[Citation Revised June 1998].**	Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in metal drums.
HW.15.6. Containers of hazardous waste at CESQGs must be closed during storage and handled in a safe manner (RP, 561 FW 6.7E(2)(b)(ii) and 6.7E(2)(b)(v)) **[Citation Revised June 1998].**	Verify that containers are closed, except when it is necessary to add or remove waste (check bungs on drums). Verify that handling and storage practices do not cause damage to the containers or cause them to leak.
HW.15.7. Containers of hazardous waste are	Verify that all hazardous waste containers are identified and stored in

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required to be stored in designated storage areas at CESQGs that meet specific parameters (RP, 561 FW 6.7E(2)(c)} **[Citation Revised June 1998].**	appropriate areas. (NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.) Verify that the storage area has a portable fire extinguisher and special extinguishing equipment is needed for the waste being stored. Verify the following by inspecting storage areas: – containers are not stored more than two high and have pallets between them – containers are positioned so that the label is clearly visible at all times – containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system) – at least 3 ft of aisle space is provided between rows of containers – there is adequate spill control/containment material on hand.
HW.15.8. Storage areas are required to be inspected periodically (RP, 561 FW 6.7E(2)(d)) **[Citation Revised June 1998].**	Verify that the storage areas are inspected periodically. Verify that inspection logs are maintained by facility personnel. Verify that the inspection includes the following: – condition of drums – compatibility/segregation of wastes – required labels – adequate aisle space – proper safety equipment – adequate spill control materials – storage period compliance.
HW.15.9. CESQGs are required to have a contingency plan (RP, 561 FW 6.9B(4) and 6.9B(7)) **[Citation Revised June 1998].**	Verify that the facility has a contingency plan that is specific to the wastes managed at the facility. Verify that the plan includes: – a description of actions to be taken during an emergency – a description of arrangements made with local police departments, fire departments, hospitals, contractors, and state and local emergency response teams as appropriate – names, addresses, and phone numbers of all persons qualified to act as emergency coordinators

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	– a list of all emergency equipment at the facility, its location, and what it looks like – an evacuation plan for facility personnel where there is a possibility that an evacuation would be needed. Verify that the plan is routinely reviewed and updated, especially when emergency coordinators change, the waste being handled changes, and/or the list of emergency equipment changes.
HW.15.10. CESQG facilities are required to have an emergency coordinator on call at all times (RP, 561 FW 6.9B(6)) **[Citation Revised June 1998].**	Verify that there is at least one employee at the facility or on call at all times with the responsibility for coordinating all emergency response measure.

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SMALL QUANTITY GENERATORS (SQGs) **HW.20** **General**	(NOTE: An SQG generates more than 100 kg [≈ 220 lb, 27 gal] but less than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.)
HW.20.1. Generators of more than 100 kg [≈ 220 lb] but less than 1000 kg [≈ 2205 lb] of hazardous waste per month may qualify as an SQG that can accumulate hazardous waste onsite for 180 days without a permit if specific conditions are met (40 CFR 262.34 (d)(1), 262.34(d)(4), 262.34(e), and 262.34 (f)).	Inspect containers, storage, and records. Verify that no more than 1000 kg [≈ 2205 lb] of hazardous waste is generated in any month. Verify that the onsite accumulation time does not exceed 180 days. (NOTE: For an SQG, the accumulation start date begins when the first waste is poured/placed into the waste container, except for at satellite accumulation points.) (NOTE: The 180-day time period is extended to 270 days if the waste must be transported more than 200 mi to a TSDF. This extension does not apply if a TSDF is available within 200 mi and the facility chooses to transport the waste to a farther away TSDF.) Verify that no more than 6000 kg [≈ 13,228 lb] is allowed to accumulate at the facility. Verify that containers are marked with the date accumulation began and the words HAZARDOUS WASTE. Verify that the containers and the areas at which containers are stored meet the requirements outlined in the subsections pertaining to SQGs. (NOTE: When an SQG exceeds the quantity generation or amount accumulation, it becomes subject to either Generator or TSDF requirements. When an SQG exceeds the storage time limitation, the SQG becomes subject to all storage facility and permitting requirements.)
HW.20.2. SQGs that generate, transport, or handle hazardous wastes must obtain a USEPA identification number (40 CFR 262.12(a), 262.1(b), and 265.11).	Examine documentation from USEPA for the facility's generator identification number. Verify that the correct identification number is used on all appropriate documentation (i.e., manifests).
HW.20.3. An SQG must	Verify that all transporters of hazardous waste of TSDFs have a

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not offer its hazardous waste to transporters or to TSDFs that have not received a USEPA identification number (40 CFR 262.12(c)).	USEPA identification number by examining records pertaining to disposal contract awards.
HW.20.4. SQGs of hazardous waste are required to use manifests and keep records of hazardous waste activity (40 CFR 262.20, 262.40(a), 262.40(c), 262.40(d), 262.42(b), 262.43, and 262.44).	Verify that signed copies of returned manifests are kept for 3 yr. Verify that exception reports were submitted to the USEPA regional administrator when a signed manifest copy was not received within 60 days of the waste being accepted by the initial transporter. Verify that exception reports are kept for at least 3 yr. Verify that records of test results, waste analyses, and determinations are kept for 3 yr. (NOTE: The requirement to prepare a manifest does not apply if: – the waste is reclaimed under contractual agreement and: – the type of waste and frequency of shipments are specified in the agreement – the vehicle used to transport the waste to the recycling facility and to deliver regenerated material back to the generator is owned and operated by the reclaimer – the generator maintains a copy of the reclamation agreement for at least 3 yr after termination of the agreement.) (NOTE: Period of retention of records is extended automatically during the course of any unresolved enforcement action or as requested by the USEPA administrator.)
HW.20.5. SQGs are required to have an emergency coordinator and emergency response planning (40 CFR 262.34(d)(5)).	Verify that the facility has an emergency coordinator. Verify that the following emergency information is posted next to the telephone: – name and telephone number of emergency coordinator – location of fire extinguishers and spill control materials – location of fire alarms (if present) – telephone number of fire department. Verify that waste handlers are familiar with waste handling and emergency procedures.

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SQGs **HW.25** **Personnel Training**	(NOTE: An SQG generates more than 100 kg [≈ 220 lb, 27 gal] but less than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.)
HW.25.1. SQG personnel are required to be thoroughly familiar with proper waste handling and emergency procedures (40 CFR 262.34(d)(5)(iii)).	Verify that personnel are thoroughly familiar with waste handling and emergency procedures relevant to their responsibilities during normal facility operation and emergencies.
HW.25.2. SQG personnel who handle hazardous waste are required to meet certain training requirements (RP, 561 FW 6.9C(3)) **[Citation Revised June 1998].**	Verify that the training program is directed by a person trained in hazardous waste management procedures. Verify that the training program coincides with the hazard communication program and includes the following: – response to fire or explosion – response to leaks or spills – waste turn-in procedures – identification of hazardous wastes – container use, marking, labeling, and onsite transportation – manifesting and offsite transportation – personnel health and safety and fire safety – facility shutdown procedures. Verify that new employee training is completed within 6 mo of employment. Verify that an annual review of initial training is provided. Verify that employees do not work unsupervised until training is completed. Verify specifically that accumulation point managers and hazardous waste handlers have been trained.
HW.25.3. Training records should be maintained for all SQG staff who manage hazardous waste (MP).	Examine training records and verify that they include the following: – job title and description for each employee by name – written description of how much training each position will obtain – documentation of training received by name.

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	Determine if training records are retained for 3 yr after employment at the facility terminates or until closure of the facility.

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SQGs **HW.30** **Containers**	(NOTE: An SQG generates more than 100 kg [≈ 220 lb, 27 gal] but less than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.)
HW.30.1. Containers used to store hazardous waste at SQGs must be in good condition and not leaking (40 CFR 262.34(d)(2) and 265.171).	Verify that containers are not leaking, bulging, rusting, damaged, or dented. Verify that waste is transferred to a new container or managed in another appropriate manner when necessary.
HW.30.2. Containers used at SQGs must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34 (d)(2) and 265.172).	Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in metal drums.
HW.30.3. Containers of hazardous waste at SQGs must be closed during storage and handled in a safe manner (40 CFR 262.34 (d)(2) and 265.173).	Verify that containers are closed, except when it is necessary to add or remove waste (check bungs on drums). Verify that handling and storage practices do not cause damage to the containers or cause them to leak.
HW.30.4. The handling of incompatible wastes, or incompatible wastes and materials in containers at SQGs, must comply with safe management practices (40 CFR 262.34(d)(2) and 265.177).	Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers unless it is done so that it does not: – generate extreme heat or pressure, fire, or explosion, or violent reaction – produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health – produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions – damage the structural integrity of the device or facility – by any other like means threaten human health.

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	(NOTE: Incompatible wastes as listed in Appendix 4-5 should not be placed in the same drum.) Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material. Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall, or other device.

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SQGs **HW.35** **Satellite Accumulation Points** **HW.35.1.** All SQGs may accumulate as much as 55 gal of hazardous waste or 1 qt of acutely hazardous waste in containers at or near any point of initial generation without complying with the requirements for onsite storage if specific standards are met (40 CFR 262.34(c)).	(NOTE: An SQG generates more than 100 kg [≈ 220 lb, 27 gal] but less than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.) (NOTE: This type of storage is often referred to as a satellite accumulation point.) Verify that the satellite accumulation point is at or near the point of generation and is under the control of the operator of the waste generating process. Verify that the containers are in good condition and are compatible with the waste stored in them and that the containers are kept closed except when waste is being added or removed. Verify that the containers are marked HAZARDOUS WASTE or other words that identify contents. (NOTE: See Appendices 4-1, 4-2, 4-3, and 4-4 for guidance on characteristic and listed hazardous wastes.) Verify that, when waste is accumulated in excess of quantity limitations, the following actions are taken by interviewing the shop managers: – the excess container is marked with the date the excess amount began accumulating – the excess waste is transferred to a 180-day or permitted storage area within 3 days.

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SQGs **HW.40** **Container Storage Areas**	(NOTE: An SQG generates more than 100 kg [≈ 220 lb, 27 gal] but less than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.)
HW.40.1. Containers of hazardous waste are required to be stored in designated storage areas at SQGs that meet specific parameters (RP, 561 FW 6.7E(2)(c)} **[Citation Revised June 1998].**	Verify that all hazardous waste containers are identified and stored in appropriate areas. (NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.) Verify that the storage area has a portable fire extinguisher and special extinguishing equipment is needed for the waste being stored. Verify the following by inspecting storage areas: – containers are not stored more than two high and have pallets between them – containers are positioned so that the label is clearly visible at all times – containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system) – at least 3 ft of aisle space is provided between rows of containers – there is adequate spill control/containment material on hand.
HW.40.2. SQG storage areas for hazardous waste must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 262.34(d)(4) and 265.30 through 265.37).	Determine if the following required equipment is easily accessible and in working condition by inspecting the SQG storage areas: – internal communications or alarm system capable of providing immediate emergency instruction to facility personnel – a telephone or hand-held two-way radio – portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals) – spill control equipment – decontamination equipment – fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, automatic sprinklers, or water spray systems. Determine if equipment is tested and maintained as necessary to ensure proper operation in an emergency. Verify that sufficient aisle space is maintained to allow unobstructed

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	movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the operation. Verify that police, fire departments, and emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations as appropriate for the type of waste and potential need for such services. Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency as appropriate for the type of waste and potential need for such services.
HW.40.3. SQGs must conduct weekly inspections of container storage areas (40 CFR 262.34(d)(2) and 265.174).	Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers.

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SQGs
 	
HW.42
Storage Tanks
 	
HW.42.1. SQGs must comply with certain storage tank requirements (40 CFR 262.34(d)(3) and 265.201(a) through 265.201(c)).
	(NOTE: An SQG generates more than 100 kg [≈ 220 lb, 27 gal] but less than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.)
	
	Determine if the facility is an SQG that stores or treats wastes in tanks.
	
	Verify that:
	
	– the tank prevents:
	  – generation of extreme heat or pressure, fire or explosions, or violent reactions
	  – production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment
	  – production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion
	  – damage to structural integrity of the device or facility
	  – threats to human health or the environment through other means
	– no treatment reagent or hazardous wastes are placed in the tank that would cause it to rupture, leak, corrode, or otherwise fail before the end of its intended life
	– uncovered tanks have at least 60 cm (2 ft) of freeboard unless the tank has a containment structure, drainage control system, or a diversion structure with a volume that equals or exceeds the capacity of the top 60 cm (2 ft) of the tank
	– continuous feed tanks have a wastefeed cutoff or other stop/bypass system.
	
	Verify that the following are inspected at the indicated times:
	
	– discharge control equipment at least once each operating day
	– monitoring equipment (pressure and temperature gauges) at least once each operating day
	– waste level in tank at least once each operating day
	– construction material of the tank for corrosion or leakage weekly
	– surrounding area for leakage and/or contamination at least weekly.

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HW.42.2. Tank systems at SQGs must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 262.34(d)(3) and 265.201(e) through 265.201(f)).	Verify that ignitable or reactive wastes are not placed in a tank system unless one of the following is done: – the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable and the minimum requirements for reactive and ignitable wastes are met – the waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react – the tank system is used solely for emergencies. Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the National Fire Protection Association's (NFPA'S) *Flammable and Combustible Liquids Code* are maintained. Verify that incompatible waste, or incompatible wastes and materials, are not placed in the same tank system unless minimum safety requirements are met. Verify that hazardous waste is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material unless minimum safety requirements are met.
HW.42.3. SQGs must comply with specific tank closure requirements (40 CFR 265.201(d)).	Verify that tank systems in the process of being closed or closed had all hazardous waste removed from tanks, discharge control equipment, and discharge confinement structures.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
SQGs **HW.45 Disposal of Restricted Waste** **HW.45.1.** SQGs must test their wastes or use process knowledge to determine if they are restricted from land disposal (40 CFR 268.7(a)(1)) **[Revised June 1998].**	(NOTE: See Appendix 4-6 for a summary of recordkeeping and notification requirements.) (NOTE: An SQG generates more than 100 kg [≈ 220 lb, 27 gal] but less than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.) Determine whether the SQG determines if wastes have to be treated prior to disposal. (NOTE: Determination can be made by testing the waste or using knowledge of the waste.) Determine if land disposal restricted wastes are generated by reviewing test results (see Appendix 4-7).

HW.45.2. When an SQG is managing a waste or soil which does not meet treatment standards, a notice must be issued to the TSDF in writing of the appropriate treatment standards and prohibition levels (40 CFR 268.7(a)(2), 268.7(a)(3) and 268.7(a)(10)) **[Revised June 1998].**	Verify that, for waste or soil which does not meet the applicable treatment standards or exceeds the applicable prohibition levels, the notice is issued and includes:
	
	– the USEPA hazardous waste number
	– waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001 - F005, F039, D001, D002, D003, and D012 - D043
	– whether the waste is a nonwastewater or wastewater
	– the subcategory of the waste
	– for hazardous debris, the contaminants subject to treatment, and indication that the contaminants are being treated plus:
	  – the USEPA hazardous waste number
	  – waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001 - F005, F039, D001, D002, D003, and D012 - D043
	  – whether the waste is a nonwastewater or wastewater
	  – the subcategory of the waste
	– a certification statement for contaminated soil.
	
	Verify that, for waste or contaminated soil which meets the treatment standard at the original point of generation, the notice includes:
	
	– the USEPA hazardous waste number
	– waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001 - F005, F039, D001, D002, D003, and D012 - D043
	– whether the waste is a nonwastewater or wastewater

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	– the subcategory of the waste – the manifest number associated with the shipment – the waste analysis data, when available – the signature of an authorized representative certifying that the waste complies with the treatment standards of 40 CFR 268. Verify that, for restricted waste which is subject to an exemption from a prohibition of the type of land disposal used, the notice states that the waste is not prohibited from land disposal and includes: – the USEPA hazardous waste number – waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001 - F005, F039, D001, D002, D003, and D012 - D043 – whether the waste is a nonwastewater or wastewater – the subcategory of the waste – the manifest number associated with the shipment – the waste analysis data, when available – for hazardous debris, the contaminants subject to treatment, and indication that the contaminants are being treated plus: – the USEPA hazardous waste number – waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001 - F005, F039, D001, D002, D003, and D012 - D043 – whether the waste is a nonwastewater or wastewater – the subcategory of the waste. (NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste subject to the agreement. The SQG will retain an onsite copy of the notification and certification along with the tolling agreement for at least 3 yr after the termination or expiration of the agreement.)
HW.45.3. SQGs that are	Verify that the plan describes the procedures the generator will carry

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managing hazardous wastes in tanks, containers, or containment buildings and treating the waste to meet applicable treatment standards must develop and follow a written waste analysis plan (40 CFR 268.7(a)(5) and 268.7(a)(10)) **[Citation Revised June 1998].**	out to comply with treatment standards. (NOTE: SQGs treating hazardous debris under the alternative treatment standards in Table 1 of 40 CFR 268.7(a)(4) are not required to conduct waste analysis.) Verify that the plan is kept onsite and: – the plan is based on a detailed chemical and physical analysis of representative sample of the prohibited waste being treated – contains all information necessary to treat the wastes in accordance with regulatory requirements, including the selected testing frequency – the plan is filed with the USEPA regional administrator or state-authorized official at least 30 days prior to the treatment activity, with delivery verified. (NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste subject to the agreement. The SQG will retain an onsite copy of the notification and certification along with the tolling agreement for at least 3 yr after the termination or expiration of the agreement.)
HW.45.4. SQGs are required to keep specific documents pertaining to restricted wastes onsite (40 CFR 268.7(a)(4), 268.7(a)(6), 268.7(a)(7) and 268.7(a)(10))**[Revised June 1998].**	Verify that, if generator knowledge is used to determine whether a waste or contaminated soil meets land disposal restriction requirements, the supporting data used in making this determination is retained onsite in the facility operating files. Verify that, when it is determined whether a waste or contaminated soil is restricted using appropriate test methods, the waste analysis data are retained onsite in the files. Verify that, when managing a prohibited waste that is excluded from the definition of a hazardous waste or solid waste or exempt from RCRA Subtitle C, a one-time notice is placed in the files stating that the generated waste is excluded. Verify that a copy of all notices, certifications, demonstrations, waste analysis data, and other documentation is kept for at least 3 yr from the date the waste was last sent to onsite or offsite treatment, storage, or disposal. Verify that SQGs with a tolling agreement retain the agreement and copies of notification and certification for at least 3 yr after the

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	agreement expires. Verify that land disposal restricted waste is not stored at the facility unless the SQG is storing the wastes in tanks, containers, or containment buildings onsite only for the purpose of accumulating enough hazardous waste to facilitate proper recovery, treatment, or disposal and all appropriate standards for containers, tanks, and containment buildings are met. Verify that transporters do not store manifested shipments of land disposal restricted wastes for more than 10 days. (NOTE: The prohibition on storage does not apply to hazardous wastes that have met treatment standards.) Verify that liquid hazardous wastes containing PCBs at concentrations greater than 50 ppm are stored at a site that meets the requirements of 40 CFR 761.65(b) (see the section titled Special Pollutants Management) and is removed from storage within 1 yr of the date it was first placed into storage.
HW.45.5. The storage of hazardous waste that is restricted from land disposal is not allowed unless specific conditions are met (40 CFR 268.50).	

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GENERATORS **HW.55** **General**	(NOTE: A Generator generates more than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.)
HW.55.1. Generators may accumulate hazardous waste onsite for 90 days or less without a permit or interim status provided they meet certain conditions (40 CFR 262.34(a)(2), 262.34(a)(3), and 262.34(b)).	Inspect each accumulation point and interview the accumulation point manager. Verify that: – the recorded start date indicates no container or tank has been accumulating a hazardous waste longer than 90 days (unless granted a 30-day extension) – each container and tank is labeled or marked clearly with the words HAZARDOUS WASTE or other appropriate words clearly indicating the contents – the accumulation start date is indicated. (NOTE: For a generator, the accumulation start date begins when the first waste is poured/placed into the waste container, except for at satellite accumulation points.) (NOTE: A generator who meets these standards is exempt from meeting the closure requirements outlined in 40 CFR 265.110 through 265.156, except for 265.111 and 265.114.) (NOTE: A generator who accumulates hazardous waste for more than 90 days (without an extension) is subject to all TSDF and permitting requirements.)
HW.55.2. A generator that generates, transports, or handles hazardous wastes must obtain a USEPA identification number (40 CFR 262.12(a), 262.12(b), 264.11, and 265.11).	Examine documentation from USEPA for the facility's generator identification number. Verify that the correct identification number is used on all appropriate documentation (i.e., manifests).

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HW.55.3. Generators must not offer their waste to transporters or TSDFs that have not received a USEPA identification number (40 CFR 262.12(c)).	Verify that all transporters of hazardous wastes or TSDFs used by the generator have a USEPA identification number by examining records pertaining to disposal contract awards.
HW.55.4. Generators of hazardous waste must submit a biennial report to the regional administrator by 1 March of even numbered years (40 CFR 262.40(b) and 262.41 (a)).	Verify that the biennial report (USEPA Form 8700-13A) is complete and was submitted in a timely manner. Verify that copies are kept for 3 yr. (NOTE: Reporting for exports of hazardous waste is not required.) (NOTE: This may not apply if an annual report was submitted to the state depending on the state requirements.) (NOTE: Periods of retention of records may be extended automatically during the course of any unresolved enforcement action or at the request of the USEPA administrator.)
HW.55.5. Generators are required to use manifests, file manifest exception reports, and maintain records (40 CFR 262.40(b), 262.40 (d), and 262.42(a)).	Verify that manifests are used when shipping the waste offsite. Verify that exception reports are filed with the USEPA regional administrator if a copy of the manifest is not received within 45 days after the waste is accepted by the initial transporter. Verify that manifests and exception reports are kept for 3 yr. (NOTE: Periods of retention for records may be extended automatically during the course of any unresolved enforcement action or at the request of the USEPA administrator.)
HW.55.6. Generators are required to keep records of waste analyses, tests, and waste determinations (40 CFR 262.40(c)).	Verify that the appropriate records are kept for 3 yr from the date the waste was last sent to the onsite or offsite TSDF. (NOTE: Periods of retention for reports may be extended automatically during the course of any unresolved enforcement action or at the request of the USEPA administrator.)

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HW.55.7. Generator storage areas must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 262.34(a)(4) and 265.30 through 265.37).	Determine if the following required equipment is easily accessible and in working condition at the storage area: – internal communications or alarm system capable of providing immediate emergency instruction to facility personnel – a telephone or hand-held two-way radio – portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals) – spill control equipment – decontamination equipment – fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, automatic sprinklers, or water spray systems. Determine if equipment is tested and maintained as necessary to ensure proper operation in an emergency. Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the operation. Verify that police, fire department, and emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations as appropriate for the type of waste and potential need for such services. Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency as appropriate for the type of waste and potential need for such services.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
GENERATORS **HW.60** **Personnel Training**	(NOTE: A Generator generates more than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.)
HW.60.1. All facility personnel who handle hazardous waste must meet certain training requirements (40 CFR 262.34(a)(4) and 265.16(a) through 265.16(c)).	Verify that the training program is directed by a person trained in hazardous waste management procedures. Verify that the training program includes the following: – contingency plan implementation (emergency procedures, equipment, and systems) – key parameters for automatic waste feed cut-off system – procedures for using, inspecting, and repairing emergency and monitoring equipment – operation of communications and alarm systems – response to fire or explosion – response to groundwater contamination incidents. Verify that new employee training is completed within 6 mo of employment/ assignment. Verify that an annual review of initial training is provided. Verify that employees do not work unsupervised until training is completed. Verify specifically that accumulation point managers and hazardous waste handlers have been trained.
HW.60.2. Training records must be maintained for all facility staff who manage hazardous waste (40 CFR 262.34(a)(4), 265.16 (d), and 265.16(e)).	Verify that training records include the following: – job title and description for each employee by name – written description of how much training each position will obtain – documentation of training received by name. Determine if training records are retained for 3 yr after employment at the facility terminates or until the closure of the site.

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GENERATORS **HW.65** **Contingency Plans and Emergency Coordinators**	(NOTE: A Generator generates more than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.)
HW.65.1. Generators must have a contingency plan (40 CFR 262.34(a)(4) and 265.50 through 265.54).	(NOTE: Generating activities may be addressed in the facility's Spill Prevention, Control, and Countermeasure (SPCC) plan or other emergency plan; or, if none exists, in a separate contingency plan.) Verify that the contingency plan is designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents. Verify that the plan includes the following: – a description of actions to be taken during an emergency – a description of arrangements made with local police departments, fire departments, hospitals, contractors, and state and local emergency response teams as appropriate – names, addresses, and phone numbers of all persons qualified to act as emergency coordinator – a list of all emergency equipment at the facility and where this equipment is required, located, and what it looks like – an evacuation plan for facility personnel where there is a possibility evacuation would be needed. Verify that copies of the contingency plan are maintained at the generation sites and storage areas and also have been submitted to organizations which may be called upon to provide emergency services. Verify that the contingency plan is routinely reviewed and updated, especially when the facility is issued a new permit, the plan fails in an emergency, the emergency coordinators change, the waste being handled changes, and/or the list of emergency equipment changes.

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HW.65.2. Each generator must have an emergency coordinator on the facility premises or on call at all times (40 CFR 262.34(a)(4) and 265.55).	Verify that, at all times, there is at least one employee at the facility or on call, with responsibility for coordinating all emergency response measures. Verify that the emergency coordinator is thoroughly familiar with the facility, the characteristics of the waste handled, and the provisions of the contingency plan. In addition, verify that the emergency coordinator has the authority to commit the resources needed to carry out the contingency plan.
HW.65.3. Emergency coordinators at generators must follow certain emergency procedures whenever there is an imminent or actual emergency situation (40 CFR 262.34(a)(4) and 265.56(a) through 265.56(i)).	Verify that the emergency coordinator is required to follow these emergency procedures: – immediately activate facility alarms or communication systems and notify appropriate base, state, and local response parties – identify the character, exact source, amount, and a real extent of any released materials – assess possible hazards to human health or the environment, including direct and indirect effects (e.g., release of gases, surface runoff from water, or chemicals used to control fire or explosions, etc.) – stop processes and operations at the facility when necessary to prevent fires. explosions, or further releases – collect and contain the released waste – remove or isolate containers when necessary – monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment whenever appropriate – provide for treatment, storage, or disposal of recovered waste, contaminated soil, surface water, or other material – ensure that no waste which may be incompatible with the released material is treated, stored, or disposed of until cleanup is completed – ensure that all emergency equipment is cleaned and fit for its intended use before operations are resumed – notify the USEPA and appropriate state and local authorities that the facility is in compliance before operations resume.
HW.65.4. Operators must	Determine if incidents have been recorded and corrective actions

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record the time, date, and details of any incident that requires implementing the contingency plan (40 CFR 262.34(a)(4) and 265.56(j)).	taken through a review of the facility operating records. Verify that written reports have been submitted to the USEPA regional administrator within 15 days after the incident.

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GENERATORS **HW.70** **Containers**	(NOTE: See Appendix 4-8 for guidance on the schedule for implementation of air emissions standards in 40 CFR 265.1080 through 265.1091. Also in relation to the requirements for air emissions standard, see the definitions of *Exempted Hazardous Waste Containers and Surface Impoundments* and *Exempted Hazardous Waste Management Unit*. There are documentation requirements for exempted containers.) (NOTE: A Generator generates more than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.)
HW.70.1. Containers used to store hazardous waste at generators must be in good condition and not leaking (40 CFR 262.34(a)(1)(i) and 265.171).	Verify that containers are not leaking, bulging, rusting, damaged, or dented. Verify that waste is transferred to a new container or managed in another appropriate manner when necessary.
HW.70.2. Containers used at generators must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34(a)(1)(i) and 265.172).	Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in metal drums.
HW.70.3. Containers at generators must be closed during storage and handled in a safe manner (40 CFR 262.34(a)(1)(i) and 265.173).	Verify that containers are closed, except when it is necessary to add or remove waste (check bungs on drums, look for funnels). Verify that handling and storage practices do not cause damage to the containers or cause them to leak.
HW.70.4. The handling of	Verify that incompatible wastes or incompatible wastes and materials

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incompatible wastes, or incompatible wastes and materials in containers at generators, must comply with safe management practices (40 CFR 262.34(a)(1)(i) and 265.177).	are not placed in the same containers unless it is done so that it does not: – generate extreme heat or pressure, fire, or explosion, or violent reaction – produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health – produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions – damage the structural integrity of the device or facility – by any other like means threaten human health or the environment. (NOTE: Incompatible wastes as listed in Appendix 4-5 should not be placed in the same drum.) Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material. Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall, or other device.
HW.70.5. Containers with design capacities greater than 0.1 m^3 [≈ 26 gal] and less than or equal to 0.46 m^3 [≈ 121.5 gal] into which hazardous waste is placed are required to meet specific design and operating standards (40 CFR 262.34(a)(1)(i), 265.178, and 265.1087(a) through 265.1087(b)(1)(i), 265.1087(c)) **[December 1996]**.	(NOTE: The requirements of 40 CFR 265.1087 do not apply to containers in which all the hazardous waste entering the container meets one of the following (40 CFR 265.1083(c) [see also the definition for exempted hazardous waste containers and surface impoundments]): – the average VO concentration of the hazardous waste at the point of waste origination is less than 500 ppmw – the organic content of the hazardous waste has been reduced by an organic destruction or removal process – the waste meets the numerical concentration limits for organic hazardous constituents as specified in 40 CFR 268.40 or has been treated by the treatment technology established by the USEPA for the waste in 268.42(a) or an equivalent method.) (NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m^3 [≈ 26 gal] or to containers of any size at satellite accumulation points (40 CFR 265.1080(b)(2).) (NOTE: Standards for containers used in waste stabilization processes (40 CFR 265.1087(b)(2)) are in checklist item HW.70.7.)

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	Verify that, for containers with a design capacity greater than 0.1 m^3 [≈ 26 gal] and less than or equal to 0.46 m^3 [≈ 121.5 gal], air emissions are controlled according to the following Container Level 1 standards: – a container that meets applicable U.S. DOT regulations on the packaging of hazardous materials for transportation – a container that is equipped with a cover and closure devices that form a continuous barrier over the container openings so that when the cover and closure devices are secured in the closed position there are not visible holes, gaps, or other open spaces into the interior of the container – an open-top container in which an organic vapor suppressing barrier is placed on or over the hazardous waste in the container so that no hazardous waste is exposed to the atmosphere. Verify that when a container using Level 1 standards, other than DOT approved containers, are used, they are equipped with covers and closure devices composed of suitable materials to minimize exposure of the hazardous waste to the atmosphere and to maintain the equipment integrity for as long as it is in service. Verify that, whenever waste is in a container using Level 1 controls, covers, and closure devices are installed and closure devices are secured and maintained in the closed position except as follows: – opening of a closure device or cover is allowed for adding waste or other material to the container as follows: – when the container is filled to the intended final level in one continuous operation, the closure devices is secured in the closed position and the covers installed at the conclusion of the filling operation – when discrete batches or quantities of material are added intermittently to the container over a period of time, the closure devices are secured in the closed position and covers installed upon either the container being filled to the intended final level, the completion of a batch loading after which no additional material will be added to the container within 15 min, the person performing the loading operation leaving the immediate vicinity of the container, or the shutdown of the process generating the material being added to the container, whichever condition occurs first – opening of a closure device or cover is allowed for removing the hazardous waste as follows: – in order to meet the requirements for an empty container – when discrete quantities or batches of material are removed

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	from the container but the container is not empty, the closure devices will promptly be returned to the closed position and the covers installed upon completion of batch removal after which no additional material will be removed within 15 min or the person performing the unloading leaves the immediate vicinity, whichever condition occurs first – opening of a closure device or cover is allowed when access inside the container is needed to perform routine activities other than transfer of hazardous waste – opening of a spring loaded, pressure vacuum relief valve, conservation vent, or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of maintain internal container pressure – opening of a safety device to avoid unsafe conditions.
HW.70.6. Containers with design capacities greater than 0.46 m^3 [≈ 121.5 gal] into which hazardous waste is placed are required to meet specific design and operating standards (40 CFR 262.34(a)(1)(i), 265.178, and 265.1087(a) through 265.1087(b)(1)(ii), 265.1087(b)(1)(iii), 265.1087(c), and 265.1087(d)) **[December 1996]**.	(NOTE: The requirements of 40 CFR 265.1087 do not apply to containers in which all the hazardous waste entering the container meets one of the following [see also the definition for exempted hazardous waste containers and surface impoundments] (40 CFR 265.1083(c): – the average VO concentration of the hazardous waste at the point of waste origination is less than 500 ppmw – the organic content of the hazardous waste has been reduced by an organic destruction or removal process – the waste meets the numerical concentration limits for organic hazardous constituents as specified in 40 CFR 268.40 or has been treated by the treatment technology established by the USEPA for the waste in 268.42(a) or an equivalent method.) (NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m^3 [≈ 26 gal] or to containers of any size at satellite accumulation points (40 CFR 265.1080(b)(2).) (NOTE: Standards for containers used in waste stabilization processes (40 CFR 265.1087(b)(2)) are in checklist item HW.70.7.) Verify that, for containers with a design capacity greater than 0.46 m^3 [≈ 121.5 gal] that are not in light material service, air emissions are controlled according to the following Container Level 1 standards: – a container is used that meets applicable U.S. DOT regulations on the packaging of hazardous materials for transportation – a container is used that is equipped with a cover and closure devices that form a continuous barrier over the container openings so that when the cover and closure devices are secured

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	in the closed position there are not visible holes, gaps, or other open spaces into the interior of the container – an open-top container is used in which an organic vapor suppressing barrier is placed on or over the hazardous waste in the container so that no hazardous waste is exposed to the atmosphere. Verify that, for containers with a design capacity greater than 0.46 m^3 [≈ 121.5 gal] that are in light material service, air emissions are controlled according to the following Container Level 2 standards: – a container is used that meets applicable U.S. DOT regulations on the packaging of hazardous materials for transportation – a container is used that operates with no detectable organic emissions – a container is used that has been demonstrated within the preceding 12 mo to be vapor tight. Verify that when a container using Level 1 standards, other than DOT approved containers, is used it is equipped with covers and closure devices composed of suitable materials to minimize exposure of the hazardous waste to the atmosphere and to maintain the equipment integrity for as long as it is in service. Verify that whenever waste is in a container using Level 1 or Level 2 controls, covers and closure devices are installed and closure devices are secured and maintained in the closed position except as follows: – opening of a closure device or cover is allowed for adding waste or other material to the container as follows: – when the container is filled to the intended final level in one continuous operation, the closure devices are secured in the closed position and the covers installed at the conclusion of the filling operation – when discrete batches or quantities of material are added intermittently to the container over a period of time, the closure devices are promptly secured in the closed position and covers installed upon either: – the container being filled to the intended final level – the completion of a batch loading after which no additional material will be added to the container within 15 min – the person performing the loading operation leaving the immediate vicinity of the container – the shutdown of the process generating the material being added to the container, whichever condition

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	occurs first – opening of a closure device or cover is allowed for removing the hazardous waste as follows: – in order to meet the requirements for an empty container – when discrete quantities or batches of material are removed from the container but the container is not empty, the closure devices are promptly secured in the closed position and the covers installed either: – upon completion of batch removal after which no additional material will be removed within 15 min – the person performing the unloading leaves the immediate vicinity, whichever condition occurs first – opening of a closure device or cover is allowed when access inside the container is needed to perform routine activities other than transfer of hazardous waste – opening of a spring loaded, pressure vacuum relief valve, conservation vent, or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of maintaining internal container pressure – opening of a safety device to avoid unsafe conditions. Verify that the transfer of hazardous waste in or out of containers meeting Container Level 2 controls is done in a manner to minimize exposure of the hazardous waste to the atmosphere (i.e., a submerged fill pipe, a vapor balancing system, a vapor recovery system, a fitted opening in the top of the container through which the hazardous waste is filled and subsequently purge the transfer line before removing it).
HW.70.7. Containers with design capacities	(NOTE: The requirements of 40 CFR 265.1087 do not apply to containers in which all the hazardous waste entering the container

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greater than 0.1 m^3 [≈ 26 gal] used for the treatment of a hazardous waste by a waste stabilization process are required to meet specific design and operating standards (40 CFR 262.34(a)(1)(i), 265.178, 265.1087(a) through 265.1087(b)(2), and 265.1087(e)(1) through 265.1087(e)(3)) **[December 1996]**.	meets one of the following [see also the definition for exempted hazardous waste containers and surface impoundments] (40 CFR 265.1083(c): – the average VO concentration of the hazardous waste at the point of waste origination is less than 500 ppmw – the organic content of the hazardous waste has been reduced by an organic destruction or removal process – the waste meets the numerical concentration limits for organic hazardous constituents as specified in 40 CFR 268.40 or has been treated by the treatment technology established by the USEPA for the waste in 268.42(a) or an equivalent method.) (NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m^3 [≈ 26 gal] or to containers of any size at satellite accumulation points (40 CFR 265.1080(b)(2)).) (NOTE: Safety devices may be installed and operated as necessary.) Verify that containers with design capacities greater than 0.1 m^3 [≈ 26 gal] used for the treatment of a hazardous waste by a waste stabilization process meet the following Container Level 3 standards at those times during the waste stabilization process when the hazardous waste in the container is exposed to the atmosphere: – a container is vented directly through a closed vent system to a control device – a container is vented inside an enclosure which is exhausted through a closed vent system to a control device. Verify that for Level 3 containers, the following requirements are met: – the container enclosure is designed and operated in accordance with the criteria for a permanent total enclosure under 40 CFR 52.741 – the closed vent system and control device is designed and operated in accordance with 265.1088 (see checklist item HW.70.10).
HW.70.8. Facilities are required to have a written	(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m^3 [≈ 26 gal] or to containers

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plan and schedule for inspection and monitoring requirements for containers and meet specific inspection requirements (40 CFR 262.34(a)(1)(i), 265.178, 265.1087(c)(4), 265.1087(d)(4), and 265.1089) **[December 1996].**	of any size at satellite accumulation points (40 CFR 265.1080(b)(2)).) Verify that the facility has a written plan and schedule for performing inspections and monitoring. Verify that the plan and schedule are being met. Verify that inspections of the containers and their covers and closure devices for containers using Container Level 1 or Level 2 controls are done as follows: – when a hazardous waste is already in the container when it is first accepted and the container is not emptied within 24 h after it is accepted, it is visually inspected within 24 h after acceptance for cracks, holes, gaps, or other open spaces – when a container used for managing hazardous waste for 1 yr or more, it is visually inspected at least once every 12 mo for visible cracks, holes, gaps, or other open spaces when the cover and closure devices are secured in the closed position. Verify that when a defect is detected, the first efforts at repairs are within 24 h after detection, and repair is completed as soon as possible but no later than 5 calendar days after detection. (NOTE: If repair cannot be completed within 5 calendar days, the hazardous waste must be removed from the container.)
HW.70.9. Facilities are required to meet documentation requirements for containers (40 CFR 262.34(a)(1)(i), 265.178, 265.1087(c)(5), 265.1090(a), and 265.1090(d) through 265.1090(i)) **[December 1996].**	(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m^3 [≈ 26 gal] or to containers of any size at satellite accumulation points (40 CFR 265.1080(b)(2)).) Verify that a copy of the procedure used to determine that containers with a capacity of 0.46 m^3 [≈ 121.5 gal] or greater which do not meet DOT standards are not managing hazardous waste in light material service is available. Verify that if using Container Level 3 air emissions controls, the facility pre pares and maintains records that: – include the most recent set of calculations and measurements performed by the owner/operator to verify that the enclosure meets the criteria of a permanent total enclosure as specified in 40 CFR 52.741, Appendix B – the same records as required for closed vent systems. Verify that, if using a closed-vent system and control device, the following records are maintained:

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	– certification that is signed and dated by the owner/operator stating that the control device is designed to operate at the performance level documented by a design analysis or by performance tests when the container is operating at capacity or the highest level reasonably expected to occur – design documents if design analysis is used, including information describing the control device design and certification that the equipment meets the applicable specification – a performance test plan if performance tests are used and all test results – description and date of each modification, as applicable – identification of operating parameters, description of monitoring devices, and diagrams of monitoring sensor locations, as applicable – semiannual records of the following for those planned routine maintenance operations that would require the control device to exceed limitations: – a description of the planned routine maintenance that is anticipated to be performed for the control device during the next 6-mo period, including the type of maintenance needed, planned frequency, and lengths of maintenance periods – a description of the planned routine maintenance that was performed for the control device during the previous 6-mo period, including the type of maintenance performed and the total number of hours during those 6 mo that the control device did not meet applicable requirements – records of the following for those unexpected control device system malfunctions that would cause the control device to not meet specifications: – the occurrence and duration of each malfunction of the control device system – the duration of each period during a malfunction when gases, vapors, or fumes are vented from the waste management unit through the closed vent system to the control device while the control device is not properly functioning – actions taken during periods of malfunction to restore a malfunctioning control device to its normal or usual manner of operation – records of the management of the carbon removed from a carbon adsorption system. Verify that, for exempted containers (see the definition of Exempted Hazardous Waste Containers and Surface Impoundments), the following records are prepared and maintained as applicable:

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	– if exempted under the hazardous waste concentration conditions, information used for the waste determination in the facility operating log and/ or the date, time, and location of each waste sample if analysis results for samples are used – if exempted under incineration use or process destruction use, the identification number for the incinerator, boiler, or industrial furnace in which the hazardous waste is treated. Verify that covers designated as unsafe to monitor are listed in a log kept in the facility operating record with an explanation of why they are unsafe to inspect and monitor and a plan and schedule of inspection and monitoring is recorded. Verify that, for containers not using the air emissions controls specified in 40 CFR 265.1085 through 265.1088 (see checklist items HW.70.5 through HW.70.10), the following information is maintained: – a list of the individual organic peroxide compounds manufactured at the facility if it produces more than one functional family of organic peroxides or multiple organic peroxides within one functional family, and one or more of these organic peroxides could potentially undergo self-accelerating thermal decomposition at or below ambient temperatures – a description of how the hazardous waste containing the organic peroxide compounds identified in the above list are managed, including: – a facility identification number for the container or group of containers – the purpose and placement of this container or group of containers in the management train of this hazardous waste – the procedures used to ultimately dispose of the hazardous waste handled in the containers – an explanations why managing these containers would be an undue safety hazard. Verify that all records, except design information records, are kept for at least 3 yr. Verify that design information records are maintained in the operating record until the air emissions control equipment is replaced or otherwise no longer in service. (NOTE: See also the recordkeeping requirements for carbon adsorption units in checklist item HW.85.3.)
HW.70.10. Facilities are	(NOTE: The requirements of 40 CFR 265.1088 do not apply to

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required to meet specific requirements for closed vent systems and control devices used to achieve compliance (40 CFR 262.34(a)(1)(i). 265.178, and 265.1088) **[December 1996].**	containers in which all the hazardous waste entering the container meets one of the following (40 CFR 265.1083(c): – the average VO concentration of the hazardous waste at the point of waste origination is less than 500 ppmw – the organic content of the hazardous waste has been reduced by an organic destruction or removal process – the waste meets the numerical concentration limits for organic hazardous constituents as specified in 40 CFR 268.40 or has been treated by the treatment technology established by the USEPA for the waste in 268.42(a) or an equivalent method.) (NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m^3 [≈ 26 gal] or to containers of any size at satellite accumulation points (40 CFR 265.1080(b)(2)).) Verify that closed vent systems meet the following: – it routes the gases, vapors, and fumes emitted from the hazardous waste in the waste management unit to a control device – it is designed and operated in accordance with 40 CFR 265.1033(j) (see checklist item HW.85.2) – if it includes bypass devices that could be used to divert the gas or vapor stream to the atmosphere before entering the control device, one of the following equipment requirements is met for each type of bypass device, (NOTE: Low leg drains, high point bleeds, analyzer vents, open-ended valve or lines, spring loaded pressure relief valves, and other fittings used for safety purposes are not considered bypass devices.): – a flow indicator is installed, calibrated, maintained, and operated at the inlet to the bypass line used to divert gases and vapors from the closed-vent system to the atmosphere at a point upstream of the control device inlet – a seal or locking device is placed on the mechanism by which the bypass device position is controlled when the bypass valve is in the closed position so that the bypass device cannot be opened without breaking the seal or removing the lock. Verify that the seal or closure mechanism is visually inspected at least once every month. Verify that one of the following control devices are used: – a device designed and operated to reduce the total organic content of the inlet vapor stream vented to the control device by

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	at least 95 percent by weight – an enclosed combustion device designed and operated in accordance with 265.1033(c) (see checklist item HW.85.2) – a flare designed and operated in accordance with 40 CFR 265.1033(d) (see checklist item HW.85.2). Verify that, when a closed vent system and control device is used, the following are met: – periods of planned routine maintenance of the control device during which the device does not meet specifications do not exceed 240 h per year – control device system malfunctions are corrected as soon as practicable – it is operated such that gases, vapors, and/or fumes are not actively vented to the control device during periods of planned maintenance or control device system malfunction, except in cases where it is necessary to do so in order to avoid an unsafe condition or to implement malfunction corrective actions or planned maintenance actions. Verify that, if a carbon adsorption system is used, the following requirements are met: – all activated carbon is replaced with fresh carbon on a regular basis as outlined in 40 CFR 265.1033(g) and 265.1033(h) (see checklist item HW.85.2) – all carbon removed from the devices is managed in a correct manner. Verify that, if a control device other than thermal vapor incinerators, flare, boiler, process heater, condenser, or carbon adsorption systems are used, the requirements in 40 CFR 265.1033(i) are met (see checklist item HW.85.2). Verify that, for control devices, it is demonstrated by either a performance test or a design analysis that the device achieves compliance except for the following: – a flare – a boiler or process heater with a design heat input capacity of 44 MW or greater – a boiler or process heater into which the vent stream is introduced with the primary fuel – a boiler or process heater burning hazardous waste for which the owner or operator has been issued a final permit under 40 CFR

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	270 and has designed and operates the unit in accordance with the requirements of 40 CFR 266, subpart H – a boiler or industrial furnace burning hazardous waste for which the owner or operator has certified compliance with the interim status requirements of 40 CFR 266, subpart H. Verify that the readings from each control device are inspected at least once each operating day to check control device operation.

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GENERATORS **HW.75** **Satellite Accumulation Points** **HW.75.1.** Generators may accumulate as much as 55 gal of hazardous waste or 1 qt of acutely hazardous waste in containers at or near any point of initial generation without complying with the requirements for onsite storage if specific standards are met (40 CFR 262.34(c)).	(NOTE: A Generator generates more than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.) (NOTE: This type of storage is often referred to as a satellite accumulation point.) Verify that the satellite accumulation point is at or near the point of generation and is under the control of the operator of the waste generating process. Verify that the containers are in good condition and are compatible with the waste stored in them, and that the containers are kept closed except when waste is being added or removed. Verify that the containers are marked HAZARDOUS WASTE or other words that identify the contents. (NOTE: See Appendices 4-1, 4-2, 4-3, and 4-4 for guidance on characteristic and listed hazardous wastes.) Verify that, when waste is accumulated in excess of quantity limitations, the following actions are taken: – the excess container is marked with the date the excess amount began accumulating – the excess waste is transferred to a 90-day or permitted storage area within 3 days.

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GENERATORS **HW.80** **Container Storage Areas**	(NOTE: A Generator generates more than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.)
HW.80.1. Containers of hazardous waste are required to be stored in designated storage areas at Generators that meet specific parameters (RP, 561 FW 6.7E(2)(c)) **[Citation Revised June 1998].**	Verify that all hazardous waste containers are identified and stored in appropriate areas. (NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.) Verify that the storage area has a portable fire extinguisher and special extinguishing equipment if needed for the waste being stored. Verify the following by inspecting storage areas: – containers are not stored more than two high and have pallets between them – containers are positioned so that the label is clearly visible at all times – containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system) – at least 3 ft of aisle space is provided between rows of containers – there is adequate spill control/containment material on hand.
HW.80.2. Containers holding ignitable or reactive waste must be located 15 m (50 ft) from the property line of the facility (40 CFR 262.34(a)(1)(i) and 265.176).	Determine the distance from storage containers holding ignitable or reactive waste to the property line.
HW.80.3. Generator personnel must conduct weekly inspections of container storage areas (40 CFR 262.34(a)(1)(i) and 265.174).	Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers.
HW.80.4. Generator	Determine if the following required equipment is easily accessible and

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storage areas for hazardous waste must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 262.34(a)(4) and 265.30 through 265.37).	in working condition by inspecting the Generator storage areas: – internal communications or alarm system capable of providing immediate emergency instruction to facility personnel – a telephone or hand-held two way radio – portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals) – spill control equipment – decontamination equipment – fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, or automatic sprinklers, or water spray systems. Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency. Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the operation. Verify that police, fire departments, and emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations as appropriate for the type of waste and potential need for such services. Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency as appropriate for the type of waste and potential need for such services.

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GENERATORS **HW.85** **Emissions From Process Vents**	(NOTE: A Generator generates more than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.)
HW.85.1. Generators with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations, that manage hazardous wastes with organic concentrations of at least 10 ppmw, are required to meet specific standards (40 CFR 262.34(a)(1)(i), 265.178, 265.1030(b), and 265.1032) **[December 1996]**.	(NOTE: This applies only if the operations are conducted in one of the following: – a unit that is subject to the permitting requirements of 40 CFR 270 – a unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a hazardous waste recycling unit that is not a 90-day tank or container) and that is located at a hazardous waste management facility that is otherwise subject to the permitting requirements of 40 CFR 270 – a unit that is exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a 90-day tank or container).) Verify that one of the following is met: – total organic emissions from the process vents do not exceed 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr) – total organic emissions are reduced by use of a control device from all process vents by 95 weight percent.
HW.85.2. When a generator uses a closed-vent system and control device to meet the standards for total organic emissions, the closed-vent system and control device must meet certain minimum requirements (40 CFR 262.34(a)(1)(i), 265.178, and 265.1033(b) through 265.1033(k)) **[December 1996]**.	(NOTE: This applies to generators with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations, that manage hazardous wastes with organic concentrations of at least 10 ppmw, if the operations are conducted in one of the following: – a unit that is subject to the permitting requirements of 40 CFR 270 – a unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a hazardous waste recycling unit that is not a 90-day tank or container) and that is located at a hazardous waste management facility that is otherwise subject to the permitting requirements of 40 CFR 270 – a unit that is exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a 90-day tank or container).) Verify that control devices involving vapor recovery are designed and

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	operated to recover the organic vapors vented to the air with an efficiency of 95 weight percent or greater, unless the total organic emission limit can be attained at an efficiency of less than 95 weight percent. Verify that, if an enclosed combustion device is used (i.e. vapor incinerator, boiler or process heater), it is designed and operated to reduce the organic emissions vented to it by 95 weight percent or greater, to achieve a total organic compound concentration of 20 ppmv expressed as the sum of the actual compounds, not carbon equivalents, on a dry basis corrected to 3 percent oxygen, or to provide a minimum residence time of 0.50 s at a minimum temperature of 760 °C [1400 °F]. Verify that, if a boiler or process heater is used as the control device, the vent stream is introduced into the flame zone of the boiler or process heater. Verify that, if flares are used: – they are designed and operated with no visible emissions except for periods not in excess at 5 min during any 2 consecutive hours – they are operated with a flame present at all times – they are used only if the net heating value of the gas being combusted is 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam assisted or air assisted – if nonassisted, the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scm) or greater – if nonassisted or steam-assisted , have an exit velocity less than 18.3 m/s (60 ft/s), except when the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1000 Btu/scf) and the exit velocity is equal to or greater than 18.3 (60 ft/s) but less than 122 m/s (400 ft/s). Verify that each monitor and control device is inspected on a routine basis. Verify that each required control device is installed, calibrated, monitored and inspected as follows: – a flow indicator is installed in the vent stream at the nearest feasible point to the control device inlet, but before being combined with other streams, and provides a record of vent stream flow from each affected process vent to the control device at least once every hour – a device to continuously monitor control device operations as specified:

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	– a temperature monitoring device equipped with a continuous recorder for a thermal vapor incinerator – a temperature monitoring device equipped with a continuous recorder for a catalytic vapor incinerator – a heat sensing monitor with a continuous recorder for flares – a temperature monitoring device equipped with a continuous recorder to measure parameters that indicate good combustion operating practices are being used for a boiler or process heater – for a condenser, one of the following: – a monitoring device with a continuous recorder to measure the concentration level of the organic compound in the exhaust vent stream from the condenser – a temperature monitoring device equipped with a continuous recorder capable of monitoring temperature in the exhaust vent stream from the condenser with an accuracy of +/- 1 percent of the temperature being monitored in Celsius or in +/- 0.5 °C, whichever is greater – for a carbon adsorption system such as a fixed bed carbon adsorber that regenerates the carbon bed directly in the control device, one of the following: – a monitoring device equipped with a continuous recorder to measure the concentration levels of the organic compounds in the exhaust vent stream from the carbon bed – a monitoring device equipped with a continuous recorder to measure a parameter that indicates the carbon bed is regenerated on a regular, predetermined time cycle. Verify that readings from monitoring devices are checked at least once a day. Verify that, if a carbon adsorption system is being used that regenerates the carbon bed directly onsite, the existing carbon in the control device is replaced with fresh carbon at regular, predetermined time intervals. (NOTE: The predetermined time interval is based on the design analysis required under 40 CFR 265.1035(b)(4)(iii)(F).) Verify that, if a carbon adsorption system is being used that does not

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	regenerate the carbon bed directly onsite in the control device, the existing carbon in the control device is replaced on a regular basis. (NOTE: When to replace the carbon is determined by one of the following procedures: – monitoring the concentration level of the organic compound in the exhaust vent stream from the carbon adsorption system daily or at an interval no greater than 20 percent of the time required to consume the total carbon working capacity, whichever is longer – replace the carbon at a regular predetermined time interval that is less than the design carbon replacement interval.) Verify that closed vent systems meet one of the following: – are designed and operated with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as determined by the procedures in 40 CFR 265.1034(b) and by visual inspection – are designed to operate at a pressure below atmospheric pressure and are equipped with at least one pressure gauge or other pressure measurement device that can be read from a readily accessible location.

HW.85.3. Generators are required to maintain specific records pertaining to process vent emissions (40 CFR 262.34(a)(1)(i), 265.178 and 265.1035) **[December 1996].**	Verify that the following information is kept in the operating record:
	
	– an implementation schedule
	– up-to-date documentation of compliance
	– the test plan if test data is used to determine the organic removal efficiency or total organic compound concentration achieved by a control device
	– documentation of compliance with 40 CFR 265.1033, including:
	  – a list of all information references and sources used in preparing the documentation
	  – records, including the dates of required compliance tests
	  – design analysis, specifications, drawing, schematics, and piping and instrumentation diagrams if engineering calculations are used
	– a statement signed and dated by the operator or owner certifying that the operating parameters used in the design analysis reasonably represent the conditions which exist when the hazardous waste management unit is or would be operating at the highest load or capacity level reason ably expected
	– a statement signed and dated by the owner or operator certifying that the control device is designed to operate at an efficiency of 95 percent or greater unless the total organic concentration limit is achieved at an efficiency of less than 95 weight percent, or the

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	total organic emissions limits for affected process vents can be attained by a control device involving vapor recovery at an efficiency less than 95 weight percent. – all performance test results if used to demonstrate compliance – design documentation – monitoring and inspection results – notations of exceedance – explanation for each period of exceedance – for carbon adsorption systems: – when the carbon is replaced in carbon adsorption systems – date and time when a control device is monitored for carbon breakthrough – the date of each control device startup and shutdown. Verify that records of monitoring operations and inspection information are kept for 3 yr.
HW.85.4. Closed vent systems are required to be monitored, inspected, and leaks repaired (40 CFR 262.34(a)(1)(i), 265.178, 265.1033(k) and 265.1033(n)) **[December 1996]**.	(NOTE: This applies to generators with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations, that manage hazardous wastes with organic concentrations of at least 10 ppmw, if the operations are conducted in one of the following: – a unit that is subject to the permitting requirements of 40 CFR 270 – a unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a hazardous waste recycling unit that is not a 90-day tank or container) and that is located at a hazardous waste management facility that is otherwise subject to the permitting requirements of 40 CFR 270 – a unit that is exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a 90-day tank or container.) Verify that closed vents systems designed and operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, are monitored as follows: – an initial leak detection monitoring of the closed vent system using the procedures specified in 40 CFR 265.1034(b) on or before the date the system become subject to this section of the CFR – after initial leak detection monitoring: – visual inspection at least once a year for closed vent system joints, seams, or other connections that are permanently or semi-permanently sealed (e.g., a welded joint between two sections of hard piping or a bolted and gasketed ducting

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	flange) – whenever a component is repaired or replaced monitor according to 40 CFR 265.1034(b) – annually and at times required by the Regional Administrator for all other parts of the system using the procedures specified in 40 CFR 265.1034(b). Verify that closed vent systems designed to operate at no detectable emissions, as indicated by an instrument reading of less than 500 ppmv above background, are monitored as follows: – annual visual inspection to check for defects that could result in air pollutant emissions – initial inspection on or before the date the system becomes subject to this section of the CFR. (NOTE: For closed vent systems designed to operate at no detectable emissions, as indicated by an instrument reading of less than 500 ppmv above background, portions of the system designated as unsafe to monitor are exempt from the visual monitoring if: – the components are unsafe to monitor because monitoring personnel would be exposed to an immediate danger – a written plan that requires monitoring as practicable during safe to monitor periods is in place and followed.) Verify that detectable emissions, as indicated by visual inspection or by an instrument reading of greater than 500 ppmv above background, are controlled as soon as practicable but not later than 15 days after the emissions is detected. Verify that a first attempt at repair is made no later than 5 calendar days after the emission is detected. (NOTE: Delay of repair of a closed vent system for which leaks have been detected is allowed if the repair is technically infeasible without a process unit shutdown, or if it is determined that the emissions resulting from the immediate repair would be greater than the fugitive emissions likely to result from delay of repair.)
HW.85.5. Closed vent systems and control devices used to comply	(NOTE: This applies to generators with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations, that manage hazardous wastes with

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with the provisions of 40 CFR 265.1030 through 265.1035 are required to be operated at all times when emissions may be vented to them (40 CFR 262.34(a)(1)(i), 265.178, 265.1033(l)) **[December 1996].**	organic concentrations of at least 10 ppmw, if the operations are conducted in one of the following: – a unit that is subject to the permitting requirements of 40 CFR 270 – a unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a hazardous waste recycling unit that is not a 90-day tank or container) and that is located at a hazardous waste management facility that is otherwise subject to the permitting requirements of 40 CFR 270 – a unit that is exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a 90-day tank or container).) Verify that closed vent systems and control devices are operated at all times when emissions may be vented to them.
HW.85.6. When carbon adsorption systems are used, operators are required to manage all carbon that is a hazardous waste according to specific parameters (40 CFR 262.34(a)(1)(i), 265.178, and 265.1033(m)) **[Revised June 1998].**	(NOTE: This applies to generators with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations, that manage hazardous wastes with organic concentrations of at least 10 ppmw, if the operations are conducted in one of the following: – a unit that is subject to the permitting requirements of 40 CFR 270 – a unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a hazardous waste recycling unit that is not a 90-day tank or container) and that is located at a hazardous waste management facility that is otherwise subject to the permitting requirements of 40 CFR 270 – a unit that is exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a 90-day tank or container).) Verify that carbon removed from control devices that is a hazardous waste is managed in one of the following manners, regardless of the average VOC concentration of the carbon: – regenerated or reactivated in a thermal treatment unit that meets one of the following: – the unit has a final permit under 40 CFR 270 which implements the requirements of 40 CFR 264, subpart X – the unit is equipped with and operating air emission controls in accordance with applicable requirements – incinerated in a hazardous waste incinerator for which the operator either: – has a final permit under 40 CFR 270 which implement the requirements of 40 CFR 264, subpart O

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	– has designed and operates the incinerator in accordance with the interim status required of 40 CFR 265, subpart O – burned in a boiler or industrial furnace for which the operator either: – has been issued a final permit under 40 CFR 270 implementing 40 CFR 266 – has designed and operates the boiler or industrial furnace in accordance with the interim status requirements of 40 CFR 266, Subpart H.

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GENERATORS **HW.90** **Air Emission Standards for Equipment Leaks**	(NOTE: This section applies to equipment that contains or contacts hazardous waste with organic concentrations of at least 10 percent by weight that are managed in one of the following (40 CFR 265.1050(b)) **[December 1997]:** – a unit that is subject to the permitting requirements of 40 CFR 270 – a unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a hazardous waste recycling unit that is not a 90-day tank or container) and that is located at a hazardous waste management facility that is otherwise subject to the permitting requirements of 40 CFR 270 – a unit that is exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a 90-day tank or container) and is not a recycling unit under the provisions of 40 CFR 261.6.) (NOTE: This section does not apply to (40 CFR 265.1050(d) and 265.1050(e)) **[December 1997]:** – equipment that is in vacuum service and is identified as such on the required list – equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for less than 300 h per calendar year and is identified as such.)
HW.90.1. Generators with pumps in light liquid service, that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight, are required to meet specific standards (40 CFR 262.34(a)(1)(i), 265.178, and 265.1052) **[December 1996].**	Verify that pumps in light liquid service are monitored monthly according to designated reference methods and inspected visually weekly. (NOTE: A leak is detected if there is an instrument reading of 10,000 ppm or greater or if there is an indication of liquid dripping from the pump seal.) Verify that, when a leak is detected, the first attempt at repair is made within 5 calendar days and repair is completed within 15 calendar days. (NOTE: Pumps equipped with dual mechanical seal systems and pumps designated for no detectable emissions that meet standards outlined here do not have to be monitored monthly or visually checked weekly.) Verify that pumps equipped with a dual mechanical seal system,

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	which do not have to be monitored monthly or visually checked weekly, meet the following design and operation requirements: – the dual mechanical seal system is operated with barrier fluid at a pressure that is at all times greater than the pump stuffing box, or equipped with a barrier fluid degassing reservoir that is connected by a closed-vent system to a control device, or equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emission to the atmosphere – the barrier fluid system has no hazardous waste with organic concentrations 10 percent or greater by weight – the barrier fluid system is equipped with a sensor that will detect failure if the seal is broken – pumps are checked by visual inspection weekly – sensors are checked daily or equipped with an audible alarm that is checked monthly. (NOTE: Each owner or operator must determine, based on design considerations and operating experience, a criterion that indicate failure of the seal system, the barrier fluid system, or both.) Verify that pumps designated for no detectable emissions, as indicated by an instrument reading of 500 ppm above background or less, meet the following: – they are operated with no detectable emissions – they are tested for compliance initially upon designation, annually, and at other times as requested by the Regional Administrator – no externally actuated shaft penetrates the pump housing. (NOTE: Any pump that is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal or seals to a control device is exempt from these requirements.)
HW.90.2. Generators of hazardous waste with	Verify that each compressor is equipped with a seal system which includes a barrier fluid system and prevents leakage of total organic

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compressors that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 262.34(a)(1)(i), 265.178, and 265.1053) **[December 1996].**	emissions to the atmosphere except if: – it is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal to a control device – it is designated for no detectable emission, and: – it operates at an instrument reading of less than 500 ppm above background – it is tested for compliance initially upon designation, annually, and at times as requested by the Regional Administrator. Verify that compressor seal systems meet one of the following: – it is operated with the barrier fluid at a pressure that is at all times greater than the compressor stuffing box pressure – it is equipped with a barrier fluid system that is connected to a closed-vent system or a control device – it is equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to the atmosphere. Verify that the barrier fluid is not a hazardous waste with organic concentrations 10 percent or greater by weight. Verify that each barrier fluid system is equipped with a sensor which will detect failure of the seal system, barrier fluid system, or both. Verify that each sensor is checked daily or it is equipped with an audible alarm that is checked monthly. (NOTE: Sensors on compressors located within the boundary of an unmanned site must be checked daily.) (NOTE: Each owner or operator must determine, based on design considerations and operating experience, a criterion that indicate failure of the seal system, the barrier fluid system, or both.) Verify that, when a leak is detected, the first attempt at repair is made within 5 calendar days and the repair is made within 15 calendar days.
HW.90.3. Generators of hazardous waste with	Verify that, except during pressure releases, each pressure relief device in gas/vapor service is operated with no detectable emissions

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pressure relief devices in gas/vapor service that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 262.34(a)(1)(i), and 265.178, 265.1054) **[December 1996].**	as indicated by an instrument reading of less than 500 ppm above background. Verify that if there is a pressure release, the device is returned to a no detect able emission status within 5 calendar days and the device is monitored to ensure compliance. (NOTE: Any pressure relief device that is equipped with a closed-vent system capable of capturing and transporting leakage from the pressure relief device to a control device is exempt from these requirements.)
HW.90.4. Generators of hazardous waste with sampling connecting systems that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 262.34(a)(1)(i), 265.178, and 265.1055) **[December 1996].**	Verify that each sampling connection system is equipped with a closed-purge, closed loop system or closed-vent system. Verify that each system collects the sample purge for return to the processing or for routing to the appropriate treatment system. (NOTE: Gases displaced through filling of the sample container are not required to be collected or captured.) Verify that each closed-purge, closed-loop system, or closed-vent system does one of the following: – returns the purged process fluid directly to the process line – collects and recycles the purged process fluid – is designed and operated to capture and transport all the purged process fluid to a waste management unit that is in compliance or a control device that is in compliance. (NOTE: In-situ sampling systems are exempt from these requirements.)
HW.90.5. Generators of hazardous waste with	Verify that each open-ended valve or line is equipped with a cap, blind

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open-ended valves or lines that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific operation standards (40 CFR 262.34(a)(1)(i), 265.178, and 265.1056) **[December 1996].**	flange, plug, or a second valve. Verify that the cap, blind flange, plug, or second valve seals the open end at all times, except during operations requiring hazardous waste stream flow through the open-ended valve or line. Verify that each open-ended valve or line equipped with a second valve is operated so the valve on the hazardous waste stream end is closed before the second valve is closed. Verify that, when a double block and bleed system is being used, the bleed valve is shut or plugged except during operations that require venting the line between the block valves.
HW.90.6. Generators with valves in gas/vapor service or light liquid service, that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight, are required to meet specific monitoring and repair standards (40 CFR 262.34(a)(1)(i), 265.178, 265.1057, and 265.1062) **[December 1997].**	Verify that valves in gas/vapor service or light liquid service are monitored monthly to detect leaks. (NOTE: A leak is detected if an instrument reading of 10,000 ppm or greater is measured. But, if a leak is not detected for 2 consecutive months, monitoring may be cut back to quarterly until a leak is detected.) (NOTE: Valves that are designated for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, do not have to be monitored monthly if: – the valve has no external actuating mechanism in contact with the hazardous waste stream – the valve is operated with emissions less than 500 ppm above background – the valve is tested initially upon designation, annually, and at the request of the Regional Administrator.) (NOTE: Valves that are designated as unsafe to monitor are exempt from the requirement for monthly monitoring if: – the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger – a written monitoring plan is followed that requires monitoring as often as is reasonably practicable during safe to monitor times.) (NOTE: The generator may elect to have all valves within a hazardous waste management unit comply with an alternative standard of no greater than 2 percent of the valves to leak.) (NOTE: Valves that are designated as difficult to monitor are exempt from monthly monitoring requirements if:

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	– the valve cannot be monitored without elevating the monitoring personnel more than 2 m above a support surface – the hazardous waste management unit within which the valve is located was in operation before 21 June 1990 – a written monitoring plan is followed that requires the monitoring of the valve at least once per calendar year.) (NOTE: The following are alternatives to the prescribed monitoring schedule which can be used until the percentage of valves leaking is greater than 2 percent: – after two consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip one of the quarterly leak detection periods for the valves subject to 40 CFR 265.1057 – after five consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip three of the quarterly leak detection periods for the valves subject to 40 CFR 265.1057. Verify that the first attempt at repairing a leak is done within 5 calendar days after detection and leak repair is completed within 15 days after detection. (NOTE: First attempts at repair include, but are not limited to: – tightening of bonnet bolts – replacement of bonnet bolts – tightening of packing gland nuts – injection of lubricant into lubricated packing.)
HW.90.7. Generators of hazardous waste with pumps and valves in	Verify that pumps and valves in heavy liquid service, pressure relief devices in light liquid service or heavy liquid service, and other connectors are monitored within 5 days if evidence of a potential leak

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heavy liquid service, pressure relief devices in light liquid service or heavy liquid service, and other connectors that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight, are required to meet specific monitoring and repair standards (40 CFR 262.34(a)(1)(i), 265.178, and 265.1058) **[December 1996].**	is found by visual, olfactory, audible, or other detection method. (NOTE: Any connector that is inaccessible or is ceramic or ceramic lined is exempt from the monitoring requirements.) (NOTE: A leak is detected if an instrument reading of 10,000 ppm or greater is measured.) Verify that, when a leak is detected, the first attempt at repair occurs within 5 days and repair is done within 15 days after discovery. (NOTE: First attempts at repair include, but are not limited to: – tightening of bonnet bolts – replacement of bonnet bolts – tightening of packing gland nuts – injection of lubricant into lubricated packing.)

HW.90.8. Generators are required to keep specific records pertaining to the valves, pumps, pressure relief devices, and connecting systems being monitored for leaks and submit certain reports (40 CFR 262.34(a)(1)(i), 265.178, 265.1058(e) and 265.1064) **[December 1997].**	Verify that the following information is maintained in the generator's operating record:
	
	– equipment identification number and hazardous management unit identification
	– approximate locations
	– type of equipment
	– percent-by-weight total organics in the hazardous waste stream at the equipment
	– hazardous waste state at the equipment (gas, liquid, vapor)
	– method of compliance
	– implementation schedule if needed
	– a performance plan for control devices as needed
	– documentation of compliance
	– documentation of repair, including:
	  – the instrument and operator identification numbers and the equipment identification number
	  – the date evidence of a potential leak was found
	  – the date the leak was detected and the date of each attempt to repair the leak
	  – repair methods applied in each attempt
	  – "Above 10,000" if the maximum instrument reading after each repair attempt is greater then 10,000 ppm
	  – "Repair Delayed" and the reason for delay if the leak is not repaired within 15 calendar days after discovery
	  – documentation supporting the delay of repair of a valve
	  – signature of the owner or operator whose decision it was that repair could not be affected without a hazardous waste management unit shutdown

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	– the expected date of successful repair of the leak when it is not repaired within 15 calendar day – the date of successful repair of the leak – design documentation and monitoring, operating, and inspection information for each closed vent system control device required to comply with the provisions of 40 CFR 265.1060 – monitoring and inspection information indicating proper operation and maintenance of the control device for a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system – the following information for all equipment subject to 40 CFR 265.1052 through 265.1060: – a list of identification numbers for equipment (except welded fittings) – a list of identification numbers for equipment that the owner or operator elects to designate for no detectable emissions – a list of equipment identification numbers for pressure relief devices – the dates of required compliance tests, background levels, and maximum instrument reading measured during the compliance test – a list of identification numbers for equipment in vacuum service – identification either by list or location (area or group) of equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for less than 300 h per calendar year. Verify that the following information is kept for all valves subject to 40 CFR 265.1057(g) and (h): – a list of identification numbers for valves listed as unsafe to monitor, an explanation for each valve stating why it is unsafe to monitor, and the plan for monitoring each valve – a list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why it is difficult to monitor, and the plan for monitoring each valve – the following for all valves complying with 40 CFR 265.1062: – a schedule of monitoring – the percent of valves found leaking in each monitoring period. Verify that the following information is kept for use in determining exemptions:

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	– an analysis determining the design capacity of the unit – a statement listing the hazardous waste influent to and effluent from each unit subject to 40 CFR 265.1052 through 265.1060 and an analysis determining whether these hazardous wastes are heavy liquids – an up-to-date analysis and the supporting information and data used to determine if equipment is subject to the requirements. (NOTE: Any connector that is inaccessible or is ceramic or ceramic lined is exempt from the recordkeeping requirements.)
HW.90.9. Each piece of equipment subject to the requirements in 40 CFR 265.1050 through 265.1064 is required to be marked so that it can be distinguished from other equipment (40 CFR 262.34(a)(1)(i), 265.178, and 265.1050(c)) **[December 1996].**	Verify that each piece of equipment subject to the requirements in 40 CFR 265.1050 through 265.1064 (see checklist items HW.90.1 through HW.90.8) is marked so that it can be distinguished from other equipment.
HW.90.10. When a generator has elected to comply with alternative standards, specific actions are required (40 CFR 262.34(a)(1)(i) and 265.1061) **[May 1997].**	Determine if the owner/operator subject to 40 CFR 265.1057 (see checklist item HW.90.6) has elected to have all valves within a hazardous waste management unit comply with an alternative standard of allowing 2 percent of the valves to leak. Verify that the following actions have been taken if comply with the 2 percent alternative: – the Regional Administrator has been notified of the choice to comply with the alternative standards – a performance test was conducted initially upon designation, annually, and at other times as required by the Regional Administrator – if a valve leak is detected, first attempt at repair is within 5 calendar days and leak repair is completed within 15 days after detection. Verify that, if the owner/operator has decided to no longer comply with the 2 percent rule, they have notified the Regional Administrator.

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GENERATORS **HW.95** **Storage Tanks**	(NOTE: A Generator generates more than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.)
HW.95.1. Secondary containment is required for specific types of tank systems used to store or treat hazardous waste at generators (40 CFR 262.34(a)(1)(ii) 265.190(a), 265.190(b), and 265.193(a)).	Verify that tanks that store or treat material that becomes hazardous waste after 12 January 1987 have secondary containment as follows: – for those existing tank systems of known and documentable age, within 2 yr of the date the material becomes a hazardous waste – for those existing tank systems for which the age cannot be documented, within 8 yr of the date the material becomes a hazardous waste; but if the age of the facility is greater then 7 yr, by the time the facility reaches 15 yr of age or within 2 yr of the date the material becomes a hazardous waste, whichever comes later. (NOTE: The following are exempt from these requirements: – tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor – tank systems, including sumps, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes.)
HW.95.2. Secondary containment on tank systems at generators must meet specific requirements (40 CFR 262.34(a)(1)(ii), 265.190(a), and 265.193(b) through 265.193(d)).	Verify that secondary containment meets the following criteria: – it is designed, installed, and operated to prevent the migration of liquid out of the system – it is capable of detecting and collecting releases and accumulated liquids until removal is possible – it is constructed of or lined with materials compatible with the wastes – it is placed on a foundation or base that can provide appropriate support and prevent failure due to settlement, compression, or upset – a leak-detection system is present that is designed and operated to detect the failure of either the primary or secondary containment structure or the release of any hazardous waste within 24 h or the earliest practicable time – it is sloped or designed to drain and remove liquids from leaks, spills, or precipitation.

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	Verify that spilled or leaked wastes are removed from secondary containment within 24 h or as timely as possible. Verify that secondary containment for tanks includes one or more of the following: – a liner (external to the tank) – a vault – a double-walled tank – an equivalent approved device. (NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)
HW.95.3. External liners, vaults and double-walled tanks at generators are required to meet specific standards (40 CFR 262.34(a)(1)(ii), 265.190(a), and 265.193(e)).	Verify that external liner systems meet the following requirements: – they are designed and operated so that 100 percent of the capacity of the largest tank within the boundary would be contained – they prevent runon and infiltration of precipitation into the secondary containment unless the collection system has sufficient capacity to handle runon or infiltration – it is free of cracks or gaps – it surrounds the tank completely and covers all surrounding earth likely to come into contact with the waste if there is a release – capacity is sufficient to contain precipitation from a 25-yr, 24-h rainfall event. Verify that vault systems meet the following criteria: – it will contain 100 percent of the capacity of the largest tank within its boundary – it prevents runon and infiltration of precipitation unless there is sufficient excess capacity – it is constructed with chemical-resistant water stops at all joints – it has an impermeable interior coating that is compatible with the wastes it contains – has a means to protect against the formation and ignition of vapors within the vault if the waste is ignitable or reactive – it has an exterior moisture barrier or otherwise operated to prevent migration of moisture into the vault.

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	Verify that double-walled tanks meet the following criteria: – it is designed as an integral structure so that any release is contained by the outer shell – it is protected from both corrosion of the primary tank and the external surface of the outer shell if constructed of metal – it has a built-in continuous leak detection system capable of detecting a release within 24 h. (NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)
HW.95.4. Tank ancillary equipment at generators must also be provided with secondary containment (40 CFR 262.34(a)(1)(ii), 265.190(a), and 265.193(f)).	Verify that ancillary equipment, except for the following, has secondary containment: – aboveground piping that is visually inspected for leaks on a daily basis – welded flanges, welded joints, and welded connections that are visually inspected for leaks on a daily basis – sealless or magnetic coupling pumps and sealless valves, that are visually inspected for leaks on a daily basis – pressurized aboveground piping systems with automatic shutoff valves that are visually inspected for leaks on a daily basis. (NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)
HW.95.5. Existing tank systems that do not have secondary containment are required to meet specific requirements 40 CFR 262.34.(a)(1)(ii), 265.190(a), 265.191(a) through 265.191(c), and 265.193(i)).	Verify that existing tank systems without secondary containment meet the following: – for nonenterable underground tanks, a leak test is conducted annually – for other than nonenterable underground tanks, either a leak test is done annually or the facility develops a schedule and procedure for an assessment of the overall condition by an independent, qualified, registered, professional engineer. Verify that the facility maintains a record of the results of testing and assessments. Verify that tank systems, which store or treat materials that become hazardous waste after 14 July 1986, are assessed within 12 mo after the waste becomes hazardous. (NOTE: Tank systems that are used to store or treat hazardous waste

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	that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)
HW.95.6. Generators with new tank systems must submit to the Regional Administrator a written assessment review certified by an independent, qualified, registered professional engineer to certify that the tank was installed according to specific standards (40 CFR 262.34(a)(1)(ii) and 265.192).	Determine if the facility has any new tank systems. Verify that, when the tanks are installed they are handled, so as to prevent damage to the tank and any backfill material that is used is a noncorrosive, porous, homogeneous substance. Verify that the facility keeps on file the written assessments from the individuals required to certify the tank and supervise the installation of the tank.
HW.95.7. Tanks used for hazardous waste treatment or storage at generators must follow certain operating requirements (40 CFR 262.34(a)(1)(ii) and 265.194).	Verify that hazardous wastes or treatment reagents are not placed in tanks if they could cause the tank system (including ancillary equipment, or containment system) to fail. Verify that appropriate measures are taken to prevent overfill, including: – spill prevention controls – overfill prevention controls – maintenance of sufficient freeboard to prevent overtopping by wave, wind action or precipitation for uncovered tanks.
HW.95.8. Tank systems at generators must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 262.34(a)(1)(ii), 265.198, and 265.199).	Verify that ignitable or reactive wastes are not placed in a tank system, unless one of the following is met: – the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable and the minimum requirements for reactive and ignitable wastes are met – the waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react – the tank system is used solely for emergencies. Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or an

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	adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the National Fire Protection Association's (NFPA's) *Flammable and Combustible Liquids Code* are maintained. Verify that incompatible waste, or incompatible wastes and materials, are not placed in the same tank system unless minimum safety requirements are met. Verify that hazardous waste is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material unless minimum safety requirements are met.
HW.95.9. Generators must conduct inspections of tank systems and associated equipment (40 CFR 262.34(a)(1)(ii) and 265.195) **[May 1997]**.	Verify that a schedule and procedure have been developed and are followed to inspect overfill controls. Determine if the following inspections are conducted at least once a day: – data gathered from monitoring and detection equipment – overfill/spill control equipment facilities to ensure it is in good working order – aboveground portions of the tank to detect corrosion or releases – data gathered from tank monitoring equipment and leak detection equipment (e.g., pressure and temperature gauges and monitoring wells) – construction materials and the area surrounding tank including the secondary containment system for signs of leakage (wet spots, dead vegetation). Verify that the proper operation of cathodic protection systems are inspected within 6 mo after initial installation and annually thereafter. Verify that all sources of impressed current are inspected and/or tested every other month. Verify that inspections are documented.
HW.95.10. Tank systems or secondary containment systems at generators from which there has	Verify that the following steps are taken: – the flow or addition of hazardous wastes to the tank is stopped – the hazardous waste is removed from the tank:

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been a leak or spill or which have been declared unfit for use must be removed from service immediately and meet specific requirements (40 CFR 262.34(a)(1)(ii) and 265.196)**[June 1996]**.	– within 24 h of leak detection (or other reasonable time as demonstrated by the owner/operator) remove as much waste form the tank as necessary to prevent further release and allow inspection and repair – within 24 h (or in as timely a manner as is possible to prevent harm to human health and the environment) remove waste released to secondary containment system – a visual inspection of the release is done and: – action is taken to prevent further migration to soils or surface – visible contamination of soil and surface water is removed and disposed. Verify that notification is made within 24 h for any release to the environment to the regional administrator except for releases of 0.45 kg (1 lb) or less that are immediately contained and cleaned up. Verify that a report is submitted within 30 days containing the following information: – likely route of migration – characteristics of the surrounding soil – results of any monitoring or sampling – proximity to downgradient drinking water, surface water, and population areas – description of response actions taken or planned. Verify that the tank and/or secondary containment is repaired prior to its return to service and that extensive repairs are certified by an independent, qualified, registered, professional engineer. Verify that when the release was from a component that was without secondary containment, secondary containment features were installed before the tank was returned to service. Verify that if leaking components are replaced, the replacement complies with the relevant requirements for new tank systems. (NOTE: Reports of hazardous waste releases made pursuant to 40 CFR 302 will satisfy the reporting requirements of this part.)
HW.95.11. Hazardous waste generators are required to follow specific procedures when closing a tank system (40 CFR	Determine if the facility has closed any tank systems. Verify that all waste residues, contaminated containment system components, contaminated soils, and structures and equipment

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262.34(a)(1)(ii), 265.197(a), and 265.197(b)).	contaminated with waste have been removed or decontaminated. Verify that, if it is not possible and/or practicable to remove or decontaminate all soils, the facility closes the tank and performs postclosure care as required for landfills.

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GENERATORS
 	
HW.100
Storage Tank Emissions
 	
HW.100.1. Certain tanks used for the storage of hazardous waste are required to meet Level 1 control standards for air emissions control (40 CFR 262.34(a)(1)(ii), 265.202, and 265.1085(a) through 265.1085(c)(3) **[Revised December 1997].**
	(NOTE: See Appendix 4-8 for guidance on the schedule for implementation of air emissions standards in 40 CFR 265.1080 through 265.1091.)
	
	(NOTE: A Generator generates more than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.)
	
	(NOTE: See the definition of *Exempted Waste Management Unit* and *Exempted Hazardous Waste Storage Tanks* for exemptions to these requirements.)
	
	Verify that the following tanks meet the requirements for Tank Level 1 controls:
	
	– the hazardous waste in the tank has a maximum organic vapor pressure which is less than the maximum organic vapor pressure for the tank's design capacity category as follows:
	  – for a tank design capacity equal to or greater than 151 m^3 [≈ 39,890 gal], the maximum organic vapor pressure limit for the tank is 5.2 kPa
	  – for a tank design capacity equal to or greater than 75 m^3 [≈ 39,890 gal] but less than 151 m^3 [≈ 39,890 gal], the maximum organic vapor pressure limits for the tank is 27.6 kPa
	  – for a tank design capacity less than 75 m^3 [≈ 39,890 gal], the maximum organic vapor pressure limit for the tank is 76.6 kPa
	– the hazardous waste in the tank is not heated to a temperature that is greater than the temperature at which the maximum organic vapor pressure of the hazardous waste is determined
	– the hazardous waste in the tank is not treated using a waste stabilization process.
	
	Verify that tanks not required to meet the requirements for Level 1 controls meet the requirements for Level 2 controls.
	
	Verify that, when required, the following Level 1 controls are met:
	
	– the maximum organic vapor pressure for a hazardous waste is determined before the first time the waste is placed in the tank
	– new maximum organic vapor pressure determinations are made each time there are changes to the hazardous waste which could cause the maximum organic vapor pressure to increase to a level that is equal to or greater than the maximum organic vapor pressure limit for the tank capacity.

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	Verify that tanks requiring Level 1 control are equipped with a fixed roof designed as follows:
	
	– the roof and its closure devices are designed to form a continuous barrier over the entire surface area of the hazardous waste in the tank
	– the fixed roof is installed so that there are no visible cracks, holes, gaps, or other open spaces between roof section joints or between the interface of the roof edge and the tank wall
	– each opening in the fixed roof, and any manifold system associated with the fixed roof, meets one of the following:
	  – it is equipped with a closure device designed to operate so that when the closure device is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the opening and the closure device
	  – connected by a closed vent system that is vented to a control device which removes or destroys organics in the vent stream and operates whenever hazardous waste is managed in the tank except during periods when access is necessary
	– the fixed roof and closure devices are made of suitable materials that minimize exposure of the hazardous waste to the atmosphere to the extent practical and maintain the integrity of the fixed roof and closure devices throughout their intended service life.
	
	Verify that, for tanks requiring Level 1 control, whenever hazardous waste is in the tank, a fixed roof is installed with each closure device secured in the closed position except as follows:
	
	– opening of the closure devices or removal of the fixed roof is allowed in order to:
	  – provide access to the tank for performing routine inspections, maintenance, or other activities needed for normal operations
	  – remove accumulated sludge or other residues at the bottom of the tank
	– opening of spring loaded pressure vacuum relief valves, conservation vent, or similar type of pressure relief devices is allowed during normal operations in order to maintain the tanks internal pressure in accordance with design standards
	– opening of a safety device in order to avoid unsafe conditions.

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HW.100.2. Certain tanks are required to use Level 2 control standards for air emissions control (40 CFR 262.34(a)(1)(ii), 265.202, 265.1085(b)(2), 265.1085(d) through 265.1085(e)(2), 265.1085(f)(1) and 265.1085(f)(2), 265.1085(g)(1), 265.1085(g)(2), 265.1085(h), and 265.1085(i)(1) through 265.1085(i)(3)) **[Revised August 1999]**.	(NOTE: See the definition of *Exempted Waste Management Unit* and *Exempted Hazardous Waste Storage Tanks* for exemptions to these requirements.)
	
	Verify that tanks not required to meet the requirements for Level 1 controls meet the requirements for Level 2 controls.
	
	Verify that, when using Level 2 controls, the following types of tanks are used:
	
	– a fixed roof tank equipped with an internal floating roof
	– a tank equipped with an external floating roof
	– a tank vented through a closed vent system to a control device
	– a pressure tank
	– a tank located inside an enclosure that is vented through a closed vent system to an enclosed combustion control device.
	
	Verify that, when a fixed roof with an internal floating roof is used, the following requirements are met:
	
	– the internal floating roof is designed to float on the liquid surface except when the floating roof is supported by the leg supports
	– the internal floating roof is equipped with a continuous seal between the wall of the tank and the floating roof edge that meets one of the following requirements:
	  – a single continuous seal that is either a liquid mounted seal or a metallic shoe seal
	  – two continuous seals mounted one above the other
	– the internal floating roof meets the following specifications:
	  – each opening in a noncontact internal floating roof, except for automatic bleeder vents and rim space vents, provides a projection below the liquid surface
	  – each opening in the internal floating roof is equipped with a gasketed cover or a gasketed lid except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains
	  – each penetration of the internal floating roof for sampling has a slit fabric cover that covers at least 90 percent of the opening
	  – each automatic bleeder vent and rim space vent is gasketed
	  – each penetration of the internal floating roof that allows for passage of a ladder has a gasketed sliding cover
	  – each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof has a flexible fabric sleeve seal or a gasketed sliding cover
	– the tank is operated such that, when the floating roof is resting

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	on the leg supports, the process of filling, emptying, or refilling is continuous and is completed as soon as practical – automatic bleeder vents are set at "closed" at all times when the roof is floating, except when the roof is being floated off or is being landed on the leg supports – before filling the tank, each cover, access hatch, gauge float well, or lid on any opening in their internal floating roof is bolted or fastened closed – rim space vents are set to "open" only when the internal floating roof is not floating or when the pressure beneath the rim exceeds recommended settings. Verify that, when an external floating roof is used to control air emissions, the following requirements are met: – the external floating roof is designed to float on the liquid surface except when the floating roof is supported by leg supports – the floating roof is equipped with two continuous seals, one above the other, between the wall of the tank and the roof edge – the primary seal is a liquid mounted seal or a metallic shoe seal and the total area of the gaps between the tank wall and the primary seal do not exceed 21.2 cm^2/m of tank diameter and the width of any portion of these gaps does not exceed 3.8 cm – if a metallic shoe seal is used for the primary seal, it is designed so that one end extends into the liquid in the tank and the other end extends a vertical distance of at least 61 cm above the liquid surface – the secondary seal is mounted above the primary seal and covers the annular space between the floating roof and the wall of the tank, and the total area of the gaps between the tank wall and the secondary seal do not exceed 21.2 cm^2/m of tank diameter, and the width of any portion of these gaps does not exceed 1.3 cm – the external floating roof meets the following: – each opening in a noncontact external floating roof provides a projection below the liquid surface except for automatic bleeder vents and rim space vents – each opening is equipped with a gasketed cover, seal, or lid except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves – each access hatch and each gauge float is equipped with a cover designed to be bolted or fastened when the cover is secured in the closed position – each automatic bleeder vent and each rim space vent is equipped with a gasket – each roof drain that empties into the liquid managed in the

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	tank is equipped with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening – each unslotted and slotted guide pole well is equipped with a gasketed sliding cover or a flexible fabric sleeve seal – each unslotted guide pole is equipped with a gasketed cap on the end of the pole – each slotted guide pole is equipped with a gasketed float or other device to close off the liquid surface from the atmosphere – each gauge hatch and sample well is equipped with a gasketed cover. Verify that, when an external floating roof is used, the tank is operated as follows: – when the floating roof is resting on the leg supports, the process of filling, emptying, or refilling is continuous and completed as soon as practical – each opening in the roof, except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves, is secured and maintained in a closed position at all times except when the closure device is opened for access – covers on each access hatch and each gauge float well are bolted or fastened when secured in the closed position – automatic bleeder vents are set at "closed" at all times when the roof is floating except when the roof is being floated off or is being landed on the leg supports – rim space vents are set to "open" only at those times that the roof is being floated off the roof leg supports or when the pressure beneath the rim seal exceeds the manufacturer's setting – the cap on the end of each unslotted guide pole is secured in the closed position at all times except when measuring the level or collecting samples of the liquid in the tank – the cover on each gauge hatch or sample well is secured in the closed position at all times except when the hatch or well must be opened for access – both the primary seal and the secondary seal completely cover the annular space between the external floating roof and the wall of the tank in a continuous fashion except during inspection. Verify that, when air emissions are controlled from a tank by venting

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	the tank to a control device, the following requirements are met: – the tank is covered by a fixed roof and vented directly through a closed vent system to a control device as follows: – the fixed roof and its closure devices form a continuous barrier over the entire surface area of the liquid in the tank – each opening in the fixed roof not vented to a control device is equipped with a closure device – the fixed roof and the closure devices are made of suitable materials to minimize exposure of the hazardous waste to the atmosphere, and maintain the integrity of the fixed roof and closure devices throughout their intended service life – the closed vent system is designed according to the requirements in 40 CFR 265.1088 – whenever a hazardous waste is in the tank, the fixed roof is installed with each closure device secured in the closed position and the vapor headspace underneath the fixed roof is vented to the control device except as follows: – to provide access to the tank for performing routine inspection, maintenance, or other activities needed for normal operations – to remove accumulated sludge or other residues from the bottom of the tank – opening of safety devices to avoid an unsafe condition. Verify that, when a pressure tank is used to control emissions, the following requirements are met: – the tank is designed not to vent to the atmosphere as a result of compression of the vapor headspace in the tank during the filling of the tank to capacity – all tank openings are equipped with closure devices designed to operate with no detectable organic emissions – whenever a hazardous waste is in the tank, it is operated as a closed system that does not vent to the atmosphere except when a safety device is opened to avoid an unsafe condition or when purging inerts from the tank is required and the purge stream is routed to a closed-vent system and there is an appropriate control device. Verify that, if air emissions are being controlled by using an enclosure vented through a closed vent system to an enclosed combustion

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	control device, the following are met: – the tank is located inside an enclosure designed and operated according to the criteria for a permanent total enclosure as specified in 40 CFR 52.741, Appendix B – the enclosure is vented through a closed vent system to an enclosed, combustion control device that is designed and operated according to the standards in 40 CFR 265.1088.
HW.100.3. Checklist item deleted **[January 1997].**	
HW.100.4. Checklist item deleted **[January 1997].**	

HW.100.5. Closed vent systems are required to be designed according to specific standards (40 CFR 262.34(a)(1)(ii), 265.202, and 265.1088) **[December 1997].**	(NOTE: See the definition of *Exempted Waste Management Unit* for exemptions to these requirements.)
	
	Verify that closed vent systems:
	
	– route the gases, vapors, and fumes emitted from the hazardous waste to a control device
	– are designed according to 265.1033(j)
	– meet the following if they contain bypass devices, except for low leg drains, high point bleeds, analyzer vents, open ended valves or lines, spring loaded pressure relief valves, and other fittings used for safety devices, that could be used to divert the gas or vapor stream before entering the control device:
	  – it is equipped with a seal or locking device placed on the mechanism by which the bypass device is in the closed position so that the bypass device cannot be opened without breaking the seal or removing the lock
	  – seals or closure mechanism are inspected at least once a month.
	
	Verify that the control device is one of the following:
	
	– a control device designed and operated to reduce the total organic content of the inlet vapor stream vented to the control device by at least 95 percent weight
	– an enclosed combustion device
	– a flare.
	Verify that, when using a closed vent system and control device, periods of planned routine maintenance to the control device during which the control device does not meet specifications do not exceed

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	240 h/yr.
	
	Verify that the following are met when using a carbon adsorption system:
	
	– all activated carbon in the control device is replaced on a regular basis after start-up if carbon adsorption is used
	– all carbon that is a hazardous waste and that is removed from the control device is managed according to 40 CFR 265.1033(m) regardless of the average volatile organic concentration
	– operation and maintenance is done in accordance with 265.1033(j) or 265.1033(j) if a control device is used other than a thermal vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system
	– achievement of control device performance requirements is done by a performance test or design analysis for each control device except for the following:
	  – a flare
	  – a boiler or process heater with a design heat input capacity of 44 MW or greater
	  – a boiler or process heater into which the vent stream is introduced with the primary fuel
	  – a boiler or industrial furnace burning hazardous waste for which a final permit has been issued and the unit is designed and operated in accordance with 40 CFR 266
	  – a boiler or process heater for which the owner/operator has certified compliance
	– carbon adsorption systems demonstrate achievement of performance requirements based on the total quantity of organics vented to the atmosphere from all carbon adsorption equipment that is used for organic adsorption, organic desorptions or carbon regeneration, organic recovery, and carbon disposal.

HW.100.6. When transferring hazardous waste to a tank, specific requirements must be met	Verify that transfer of hazardous waste to the tank from another tank or from a surface impoundment is done using continuous hard piping or another closed system that does not allow exposure of the

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(40 CFR 262.34(a)(1)(ii), 265.202, and 265.1085(j)) **[Revised December 1997].**	hazardous waste to the atmosphere. (NOTE: These requirements do not apply when transferring a hazardous waste to a tank under the following conditions: – the hazardous waste meets the average VO concentration of less than 500 ppm at the point of waste origination – the hazardous waste has been treated by an organic destruction or removal process – the hazardous waste meets the numerical concentrations limits for organic hazardous constituents as specified in 40 CFR 280 – the hazardous waste has been treated by the treatment technology established by the USEPA or has been removed or destroyed by an equivalent method of treatment.)
HW.100.7. Checklist item deleted **[January 1997].**	
HW.100.8. Facilities are required to meet inspection and repair requirements for tanks (40 CFR 262.34(a)(1)(ii), 265.202, 265.1085(c)(4), 265.1085(e)(3), 265.1085(f)(3), 265.1085(g)(3), 265.1085(k) and 265.1085(l)) **[January 1997].**	Verify that fixed roofs and closure devices are inspected and managed as follows: – visually inspected for defects that could result in air pollutant emissions – initial inspection is on or before the date that the tank becomes subject to these requirements – inspected annually after the initial inspection. Verify that internal floating roofs are inspected and managed as follows: – visually inspected for defects that could result in air pollutant emissions – inspected through the openings in the fixed roof at least once every 12 mo – when the tank is emptied and degassed, inspected at least every 10 yr. (NOTE: As an alternative to the requirements for inspecting the internal floating roof, if an internal floating roof is equipped with two continuous seals, one above the other, visual inspection may be done of the internal floating roof, primary and secondary seals, gaskets, slotted membranes, and sleeve seals each time the tank is emptied and degassed and at least every 5 yr.) Verify that inspection of external floating roofs are done and managed as follows:

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	– measurement of the gaps between the tank wall and the primary seal are done within 60 calendar days after initial operation of the tank following installation of the floating roof and thereafter at least once every 5 yr – measurement of gaps between the tank wall and the secondary seal are done within 60 calendar day after initial operation of the tank following installation of the floating roof and thereafter at least once every year – the floating roof and closure devices are visually inspected for defects that could result in air pollutant emissions initially on or before the date that the tank becomes subject to this regulation and thereafter annually. (NOTE: If a tank ceases to hold hazardous waste for a period of 1 yr or more, subsequent introduction of hazardous waste into the tank will be considered an initial operation for inspection purposes.) Verify that the Regional Administrator is notified prior to each of the inspections of the internal floating or the external floating roof as follows: – prior to each visual inspection of the internal floating roof or the external floating roof in a tank that has been emptied and degassed, written notification is sent so that it is received by the Regional Administrator at least 30 calendar days before refilling the tank except when an inspection is not planned – prior to each inspection to measure external floating roof seal gaps, written notification is sent so that it is received by the Regional Administrator at least 30 calendar days before the date the measurements are scheduled to be performed – when a visual inspection is not planned and could not have been known about, the Regional Administrator is notified as soon as possible but no later than 7 calendar days before refilling the tank. Verify that, for fixed roofs and associated closure devices, the air emission control equipment is visually inspected for defects that could result in air pollutant emissions initially before the tank becomes subject to these requirements and thereafter annually. Verify that defects detected during inspections are repaired as follows: – first efforts at repair are made no later than 5 calendar days after detection – repair is completed no later than 45 days after detection unless it is determined that the repair requires emptying or temporary

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	removal from service of the tank and no alternative capacity is available to accept the hazardous waste managed in the tank. (NOTE: After the initial inspections of the cover, following inspections may be performed at intervals longer than 1 yr under the following conditions: – when inspecting or monitoring the cover would expose a worker to dangerous, hazardous, or other unsafe conditions and the cover is designated as unsafe to inspect – when the tank is buried partially or entirely underground, only those portions aboveground are monitored annually.)
HW.100.9. Facilities are required to meet documentation requirements for tanks (40 CFR 262.34(a)(1)(ii), 265.202, 265.1090(a), 265.1090(b), and 265.1090(e) through 265.1090(i)) **[December 1997]**.	Verify that the following records are kept for tanks using air emissions control: – a tank identification number or other unique identifying description – a record for each required inspection that includes the following: – date the inspection was done – location and description of defects – date of detection and corrective action to repair. Verify that, for tanks using fixed roofs to meet Level 1 control standards, records are kept for each determination of the maximum organic vapor pressure of the hazardous waste, including the date and time the samples were collected, analysis method used, and analysis results. Verify that, for tanks using internal floating roofs to meet Level 2 control standards, documentation is maintained describing the floating roof design. Verify that, for tanks using external floating roofs to comply with Level 2 control standards, the following records are maintained: – documentation describing the floating roof design and the dimensions of the tank – records for each seal gap inspection, including the date, results, and calculations. Verify that, for situations where an enclosure is being used to comply with Level 2 control requirements, the following are maintained: – records for the most recent set of calculations and measurements performed by the owner or operator to verify that the enclosure meets the criteria for a permanent total enclosure – all records required for closed vent systems and control devices.

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	Verify that, if using a closed-vent system and control device, the following records are maintained: – certification that is signed and dated by the owner/operator stating that the control device is designed to operate at the performance level documented by a design analysis or by performance tests when the tank is operating at capacity or the highest level reasonably expected to occur – design documents if design analysis is used, including information describing the control device design and certification that the equipment meets the applicable specification – a performance test plan if performance tests are used – description and date of each modification, as applicable – identification of operating parameters, description of monitoring devices, and diagrams of monitoring sensor locations, as applicable – semiannual records of the following for those planned routine maintenance operations that would require the control device to exceed limitations: – a description of the planned routine maintenance that is anticipated to be performed for the control device during the next 6-mo period, including the type of maintenance needed, planned frequency, and lengths of maintenance periods – a description of the planned routine maintenance that was performed for the control device during the previous 6-mo period, including the type of maintenance performed and the total number of hours during those 6 mo that the control device did not meet applicable requirements – records of the following for those unexpected control device system malfunctions that would cause the control device to not meet specifications: – the occurrence and duration of each malfunction of the control device system – the duration of each period during a malfunction when gases, vapors, or fumes are vented from the waste management unit through the closed vent system to the control device while the control device is not properly functioning – actions taken during periods of malfunction to restore a malfunctioning control device to its normal or usual manner of operation – records of the management of the carbon removed from a carbon adsorption system. Verify that, for exempted tanks (see the definition of Exempted Hazardous Waste Storage Tanks), the following records are prepared

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	and maintained as applicable:
	
	– if exempted under the hazardous waste concentration conditions, information used for the waste determination in the facility operating log and/or the date, time, and location of each waste sample if analysis results for samples are used
	
	– if exempted under incineration use or process destruction use, the identification number for the incinerator, boiler, or industrial furnace in which the hazardous waste is treated.
	
	Verify that the covers which are designated as unsafe to monitor, are listed in a log kept in the facility operating record with an explanation of why they are unsafe to inspect and monitor and a plan and schedule of inspection and monitoring is recorded.
	
	Verify that, for tanks not using the air emissions controls specified in 40 CFR 265.1085 through 265.1088, the following information is maintained:
	
	– a list of the individual organic peroxide compounds manufactured at the facility if it produces more than one functional family of organic peroxides or multiple organic peroxides within one functional family, and one or more of these organic peroxides could potentially undergo self-accelerating thermal decomposition at or below ambient temperatures
	– a description of how the hazardous waste containing the organic peroxide compounds identified in the above list are managed, including:
	  – a facility identification number for the tank or group of tanks
	  – the purpose and placement of this tank or group of tanks in the management train of this hazardous waste
	  – the procedures used to ultimately dispose of the hazardous waste handled in the tanks
	– an explanation why managing these tanks would be an undue safety hazard
	– certification that the tank is not using inappropriate emissions control devices
	– identification of the requirements in 40 CFR 60, 61, or 63 that the tank is in compliance with.
	
	Verify that all records, except design information records, are kept for at least 3 yr.

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	Verify that design information records are maintained in the operating record until the air emissions control equipment is replaced or otherwise no longer in service.

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GENERATORS **HW.105** **Containment Buildings**	(NOTE: According to the Background Information published on page 37211 of the 18 August 1992 edition of the Federal Register, a hazardous waste containment building involves the management of a hazardous waste inside a unit designed and operated to contain the hazardous waste within the unit. This is not a building that holds drums or tanks filled with hazardous waste but a building that holds the hazardous waste itself.) (NOTE: A Generator generates more than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.)

HW.105.1. Generators with containment buildings that are in compliance are not subject to the definition of land disposal if specific requirements are met (40 CFR 262.34(a)(1)(iv) and 265.1100).	Verify that the containment building meets the following:
	
	– it is a completely enclosed, self-supporting structure that is designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit
	– it is designed to prevent failure due to pressure gradients, settlement, compression or uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations
	– it has a primary barrier that is designed to be sufficiently durable to with stand the movement of personnel, wastes, and handling of equipment within the unit
	– if the unit is used to manage liquids:
	  – there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier
	  – there is a liquid collection system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier
	  – there is a secondary containment system designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time
	– it has controls sufficient to prevent fugitive dust emissions
	– it is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel and equipment.

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HW.105.2. Containment buildings are required to be designed according to specific standards (40 CFR 262.34(a)(1)(iv), 265.1101(a)(1) through 265.1101(a)(2), and 265.1101(b)).	Verify that the containment building meet the following design standards:
	
	– it is completely enclosed with a floor, walls, and a roof to prevent exposure to the elements and to assure containment of wastes
	– the floor and containment walls, including any required secondary containment system, are designed and constructed of man-made materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit
	– it is designed to prevent failure due to pressure gradients, settlement, compression or uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations
	– it has sufficient structural strength to prevent collapse or other failure
	– all surfaces in contact with hazardous wastes are compatible with the wastes
	– it has a primary barrier that is designed to be sufficiently durable to with stand the movement of personnel, wastes, and handling of equipment within the unit and is appropriate for the chemical and physical characteristics of the waste.
	
	Verify that, if the containment building is going to manage hazardous wastes with free liquids or be treated with free liquids, the following design requirements are also met:
	
	– there is a primary barrier designed and constructed of materials to pre vent migration of hazardous constituents into the barrier (e.g., a geomembrane covered by a concrete wear surface)
	– there is a liquid collection and removal system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier:
	  – the primary barrier is sloped to drain liquids to the associated collection system
	  – liquids and wastes are collected and removed to minimized hydraulic head on the containment system at the earliest practicable time
	– there is a secondary containment system, including a secondary barrier, designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time
	
	– the leak detection component of the secondary containment

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	system meets the following: – it is constructed with a bottom slope of 1 percent or more – it is constructed of a granular drainage materials with a hydraulic conductivity of 1 x 10^{-2} cm/s or more and a thickness of 12 in. (30.5 cm) or more, or constructed of synthetic or geonet drainage materials with a transmissivity of 3 x 10^{-5} m^2/s or more – if treatment is to be conducted in the building, the treatment area is designed to prevent the release of liquids, wet materials, or liquid aerosols to other portions of the building – the secondary containment system is constructed of materials that are chemically resistant to the waste and liquids managed in the building and of sufficient strength and thickness to prevent collapse under pressure exerted by overlaying materials and by any equipment used. (NOTE: An exception to the structural strength requirement may be made for light-weight doors and windows based on the nature of the waste management operations if the following criteria are met: – the doors and windows provide an effective barrier against fugitive dust emissions – the unit is designed and operated in a manner that ensures the waste will not come in contact with the doors or windows.) (NOTE: A containment building can serve as an external liner or a secondary containment system for tanks within the building if: – it meets the requirements of 265.193(d)(1) – it meets the requirements of 265.193(b), 265.193(c)(1), and 265.193 (c)(2)).)
HW.105.3. Containment buildings are required to be operated according to specific standards (40 CFR 262.34(a)(1)(iv), 265.1101(a)(3), 265.1101(c)(1), and 265.1101(c)(4)).	Verify that incompatible wastes or treatment reagents are not placed in the building or its secondary containment system if they could cause the unit or the secondary containment system to leak, corrode, or otherwise fail. Verify that the following operational procedures are done: – controls and practices are used to ensure the containment of the waste within the building – the primary barrier is maintained so it is free of significant cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the primary barrier – the level of the stored/treated hazardous waste is maintained so the height of any containment wall is not exceeded – measures are implemented to prevent the tracking of hazardous waste out of the unit by personnel or equipment used in the

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	handling of the waste – there is a designated area for the decontamination of equipment and collection of rinsate – any collected rinsate is managed as needed according to its constituents – measures are implemented to control fugitive dust emissions so that no openings exhibit visible emissions – particulate collection devices are maintained and operated according to sound air pollution control practices. Verify that data is gathered from monitoring equipment and leak detection equipment, the site is inspected at least once every 7 days, and the results are recorded in the operating record. Verify that there is a written description of procedures to ensure that waste does not remain in the building for more than 90 days. Verify that there is documentation that the waste does not remain for more than 90 days.
HW.105.4. Containment buildings are required to be certified by a registered professional engineer (40 CFR 262.34(a)(1)(iv) and 265.1101(c)(2)).	Verify that the building has been certified by reviewing the documentation.
HW.105.5. Leaks in containment buildings must be repaired and reported (40 CFR 262.34(a)(1)(iv) and 265.1101(c)(3)).	Verify that, if a condition is detected which could lead to a leak or has already caused a leak, it is repaired promptly. Verify that, when a leak is discovered: – the discovery is recorded in the facility operating record – the portion of the containment building that is affected is removed from service – a cleanup and repair schedule is established – within 7 days the regional administrator is notified and within 14 working days written notice is provided to the regional administrator – the regional administrator is notified upon the completion of all repairs, and that certification from a registered professional engineer is also submitted.
HW.105.6. Containment buildings that contain both areas with and	Verify that each area is designed and operated according to the appropriate requirements.

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without secondary containment must meet specific requirements (40 CFR 262.34(a)(1)(iv) and 265.110(d)). **HW.105.7.** When a containment building is closed, specific requirements must be met (40 CFR 262.34(a)(1)(iv) and 265.1102).	Verify that measures are taken to prevent the release of liquids or wet materials into areas without secondary containment. Verify that a written description is maintained in the facilities operating log of operating procedures used to maintain the integrity of areas without secondary containment. Determine if the facility has closed a containment building recently. Verify that, at closure, all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate were removed or decontaminated. Verify that the containment building is closed in accordance with closure and post-closure requirements for TSDFs as outlined in the sections titled Closure and Documentation Requirements. Verify that, if it is found that not all contaminated subsoils can be practicably removed or decontaminated, the site is closed and landfill postclosure requirements are implemented.

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GENERATORS **HW.110** **Disposal of Restricted Waste** **HW.110.1.** Facilities that generate hazardous wastes must test their wastes or use process knowledge to determine if the wastes are restricted from land disposal (40 CFR 268.7(a)(1)) **[June 1998].**	(NOTE: See Appendix 4-6 for a summary of recordkeeping and notification requirements.) (NOTE: A Generator generates more than 1000 kg [≈ 2205 lb, 265 gal] of hazardous waste in any 1 mo of a calendar year.) Determine whether the generator tests for restricted wastes. Determine if the facility generates restricted wastes by reviewing test results (see Appendix 4-7).

HW.110.2. When a generator is managing a waste or soil which does not meet treatment standards, a notice must be issued to the TSDF in writing of the appropriate treatment standards and prohibition levels (40 CFR 268.7(a)(2), and 268.7(a)(3)) **[Revised June 1998].**	Verify that, for waste or soil which does not meet the applicable treatment standards or exceeds the applicable prohibition levels, the notice is issued and includes:
	
	– the USEPA hazardous waste number
	– waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001 - F005, F039, D001, D002, D003, and D012 - D043
	– whether the waste is a nonwastewater or wastewater
	– the subcategory of the waste
	– for hazardous debris, the contaminants subject to treatment, and indication that the contaminants are being treated plus:
	  – the USEPA hazardous waste number
	  – waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001 - F005, F039, D001, D002, D003, and D012 - D043
	  – whether the waste is a nonwastewater or wastewater
	  – the subcategory of the waste
	– a certification statement for contaminated soil.
	
	Verify a copy of the notice is placed on file as well.
	
	Verify that, for wastes or contaminated soil which meets the treatment standard at the original point of generation, the one-time written notice is issued and includes:
	
	– the USEPA hazardous waste and manifest number
	– the waste is subject to LDRs and the constituents of concern for F001 - F005 and F039, and underlying hazardous constituents

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	(for wastes that are not man aged in a CWA or CWA-equivalent facility), unless the waste will be treated and monitored for all constituents (NOTE: If all wastes will be treated and monitored, there is no need to put them on the LDR notice.) – whether the waste is a nonwastewater or wastewater and subdivision made within a waste code based on waste specific criteria – waste analysis data – a certification statement as outlined in 40 CFR 268.7(a)(3). (NOTE: If the waste which meets the treatment standards changes, the generator must send a new notice and certification to the receiving facility and place a copy in their files. Generators of hazardous debris excluded from the definition of hazardous waste are not subject to these requirements.) Verify that, for restricted waste which is subject to an exemption from a prohibition of the type of land disposal used, the notice states that the waste is not prohibited from land disposal and includes: – the USEPA hazardous waste and manifest number – statement that this waste is not prohibited from land disposal – waste analysis data when available – date the waste is subject to the prohibition – for hazardous debris, when treating with alternative treatment technologies, the contaminants subject to treatment and an indication that these contaminants are being treated to comply with 40 CFR 268.45.
HW.110.3. Generators that are managing prohibited wastes in tanks, containers, or containment buildings and treating the waste to meet applicable treatment standards, must develop and follow a written waste analysis plan (40 CFR 268.7(a)(5)) **[Revised June 1997].**	Verify that the plan describes the procedures the generator will carry out to comply with treatment standards. (NOTE: Generators treating hazardous debris under the alternative treatment standards are not required to conduct waste analysis.) Verify that the plan is kept onsite and: – the plan is based on a detailed chemical and physical analysis of a representative sample of the prohibited waste being treated – contains all information necessary to treat the wastes in accordance with regulatory requirements, including the selected testing frequency – made available to inspectors.

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HW.110.4. Generators are required to keep specific documents pertaining to restricted wastes onsite (40 CFR 268.7(a)(6) through 268.7(a)(8)) **[Revised June 1998].**	Verify that, if the generator is using generator knowledge to determine whether a waste or contaminated soil meets land disposal restriction requirements, the supporting data used in making this determination is retained onsite in the facility files. Verify that, if the generator has determined whether a waste or contaminated soil is restricted using appropriate test methods, the waste analysis data is retained onsite. Verify that, if the generator has determined they are managing a restricted waste excluded from the definition of a hazardous waste or solid waste or exempt from RCRA Subtitle C, a one-time notice is placed in the generator's files stating that the generated waste is excluded and the disposition of the waste. Verify that a copy of all notices, certifications, demonstrations, waste analysis data, and other documentation is kept for at least 3 yr from the date the waste was last sent to an onsite or offsite TSDF.
HW.110.5. Generators who first claim that hazardous debris is excluded from the definition of hazardous waste are required to meet specific notification and certification requirements (40 CFR 268.7(d)) **[June 1997].**	Verify that a one-time notification is submitted to the director or authorized state including the following: – the name and address of the facility receiving the treated waste – a description of the hazardous debris as initially generated, including the applicable USEPA hazardous waste codes, treatability groups, and underlying hazardous constituents – for excluded debris, the technology used to treat the debris. Verify that the notification is updated if the debris is shipped to a different facility. Verify that, for debris which is excluded, if a different type of debris is treated or if a different technology is used to treat the debris, the notification is updated.
HW.110.6. The storage of hazardous waste that is restricted from land disposal is not allowed unless specific conditions are met (40 CFR 268.50).	Verify that land disposal restricted waste is not stored at the facility unless the generator is storing the wastes in tanks, containers, or containment buildings onsite only for the purpose of accumulating enough quantity of hazardous waste to facilitate proper recovery, treatment, or disposal and all appropriate standards for containers, tanks, and containment buildings are met. (NOTE: If the 90-day storage period is exceeded, the generator is required to be permitted as a TSDF.) Verify that transporters do not store manifested shipments of land

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	disposal restricted wastes for more than 10 days. (NOTE: The prohibition on storage does not apply to hazardous wastes that have met treatment standards.) Verify that liquid hazardous wastes containing PCBs at concentrations greater than 50 ppm are stored at a site which meets the requirements of 40 CFR 761.65(b) (see the section titled Special Pollutants Management) and is removed from storage within 1 yr of the date it was first placed into storage.

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HW.120 **TRANSPORTATION OF HAZARDOUS WASTE**	(NOTE: These requirements do not apply to the onsite transportation of hazardous waste. Nor do they apply to CESQGs.)
HW.120.1. Transporters of hazardous waste that is required to be manifested must have a USEPA identification number and must comply with manifest management requirements (40 CFR 263.10(a), 263.10(b), 263.11, 263.20(a) through 263.20(d), 263.21, and 263.22(a)) **[December 1997].**	Determine if the facility transports hazardous waste offsite using its vehicles or a contractor. Verify that the transporter has a USEPA identification number. Verify that all waste accepted, transported, or offered for transport is accompanied by a manifest. Verify that, prior to transport, the transporter signs and dates the manifest and returns a copy to the generator prior to leaving the facility. Verify that, if the facility is transporter, a copy of the manifest is retained after delivery. Verify that manifests are kept on file for 3 yr. (NOTE: Special issues involved in the transportation of hazardous waste by air, rail, or water are not addressed in this guide.)
HW.120.2. Before transporting hazardous waste or offering hazardous waste for transportation offsite in the United States, the facility must package and label the waste in accordance with DOT regulations contained in 49 CFR 172, 173, 178, and 179 (40 CFR 262.30 through 262.33).	Determine what pretransport procedures for hazardous waste are used. Verify that containers are properly constructed and contain no leaks, corrosion, or bulges by inspecting a sample of containers awaiting transport. Examine end-seams for minor seeping that indicates drum failure. Verify that labeling and marking on each container is appropriate for the contents. Verify that the following information is displayed on a random sample of containers of 110 gal or less in accordance with 49 CFR 172.304: HAZARDOUS WASTE FEDERAL LAW PROHIBITS IMPROPER DISPOSAL. IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY. – GENERATOR'S NAME AND ADDRESS – MANIFEST DOCUMENT NUMBER____.

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HW.120.3. Transporters of waste offsite must take immediate notification and cleanup action if a discharge occurs during transport (40 CFR 263.30 and 263.31).	Verify that proper DOT placarding is available for the transporter. Verify that facility transport operators have instructions to notify local authorities and take cleanup action so the discharge does not present a hazard. Verify that facility transporters give notice to the NRC and report in writing as required by 49 CFR 171.15 and 171.16.
HW.120.4. The facility should ensure that transportation of hazardous wastes between buildings is accomplished in accordance with good management practices to help prevent spills, releases, and accidents (MP).	Determine if procedures exist to manage movement of hazardous wastes throughout the facility. Determine if drivers are trained in spill control procedures. Determine if provisions have been made for securing wastes in vehicles when transporting.
HW.120.5. Transporters must not store manifested shipments in containers meeting DOT packaging requirements for more than 10 days at a transfer facility (40 CFR 263.12).	Determine if the facility has a transfer facility. Verify the following: – transfer facility storage is for 10 days or less – DOT packaging requirements are met – shipments are manifested and manifests accompany shipments – storage is consistent with good management practices. (NOTE: Storage for more than 10 days will require a TSDF permit.)

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HW.122 **MILITARY MUNITIONS** **HW.122.1.** Unless specific requirements are met, waste military munitions in storage that exhibit a hazardous waste characteristic, or are listed as hazardous waste, must be managed according to the requirements in 40 CFR 260 through 40 CFR 279 (40 CFR 266.205(a), 266.205(c), and 40 CFR 266.205(d)). **[Revised January 1999].**	(NOTE: See the definition of Military Munitions and the definition of Waste Munitions. These regulations are effective 12 August 1997.) Verify that, when waste military munitions in storage that exhibit a hazardous waste characteristic, or are listed as hazardous waste, are not managed according to the requirements in 40 CFR 260 through 40 CFR 279, all of the following conditions are met: – the waste military munitions are not chemical agents or chemical munitions – the waste military munitions are subject to the jurisdiction of the Department of Defense Explosives Safety Board (DDESB) – the waste military munitions are stored in accordance with DDESB storage standards applicable to waste military munitions – within 90 days of 12 August 1997, or within 90 days of when a storage unit is first used to store waste military munitions, whichever is later, the USEPA Director is notified of the location of any waste storage unit used to store waste military munitions for which the exemption is claimed – oral notice is provided to the USEPA Director within 24 h from the time the installation becomes aware of any loss or theft of the waste military munitions or of any failure to meet the conditions of this exemption – written submission of the theft circumstances is provided within 5 days from the time of theft awareness or any failure to meet the conditions of the exemption – inventory the waste military munitions annually – inspect the waste military munitions at least quarterly – maintain records of findings of inventories and inspections for at least 3 yr. – limit access to the stored waste military munitions to appropriately trained and authorized personnel. (NOTE: This exemption only applies to storage requirements, not transportation, treatment, or disposal.) (NOTE: If a facility loses its conditional exemption, an application may be filed with the USEPA Director of reinstatement.) Verify that, if all of the above requirements are not met for waste military munitions in storage that exhibit a hazardous waste characteristic, or are listed as hazardous waste, the munitions are managed according to the requirements in 40 CFR 260 through 40

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	CFR 279. (NOTE: Waste military munitions that are chemical agents or chemical munitions and that exhibit a hazardous waste characteristic or are listed as hazardous waste are required to be managed according to the requirements of RCRA Subtitle C, except that they are not subject to the prohibitions on storage of restricted wastes found in 40 CFR 268.50.)
HW.122.2. The USEPA Director must be notified when a facility previously identified to the Director will no longer be used to store waste military munitions (40 CFR 266.205(b)) **[February 1997].**	Verify that the USEPA Director has been notified if a facility previously identified to the Director will no longer be used to store waste military munitions.
HW.122.3. Checklist item deleted **[Deleted January 1999].**	Checklist item incorporated into HW.122.1.
HW.122.4. The treatment and disposal of hazardous waste military ammunition must meet the applicable permitting, procedures, and technical standards in 40 CFR parts 260 through 270 (40 CFR 266.206) **[February 1997].**	Verify that the treatment and disposal of hazardous waste military munitions meets the applicable permitting, procedures, and technical standards in 40 CFR parts 260 through 270.

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SMALL QUANTITY UNIVERSAL WASTE HANDLERS **HW.125** **General**	(NOTE: The following waste may, at the option of the generator, be managed under the requirements of 40 CFR 273: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined at 273.6 – conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.) (NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)
HW.125.1. Small quantity handlers of universal waste, less than 5000 kg [11,111 lb] at any time, are prohibited from disposing or treating universal wastes (40 CFR 273.11).	Determine if the facility is a small quantity handler of universal waste. Verify that the facility does not dispose of universal wastes onsite. Verify that, except when responding to a release or performing waste management activities outlined in 40 CFR 273.13 (see checklist items HW.130.1 through HW.130.5), the facility does not dilute or treat universal waste.
HW.125.2. Small quantity handlers of universal waste are required to meet specific accumulation time limits (40 CFR 273.15).	Verify that universal waste is not accumulated for more than 1 yr from the date that the universal waste is generated, or received from another handler. (NOTE: The 1 yr limit may be exceeded if the cause is waiting for the accumulation of quantities necessary to facilitate proper recovery, treatment, or disposal.) Verify that the handler can demonstrate the length of time that the universal waste has been accumulated by one of the following methods: – placing the universal waste in a container and marking or labeling the container with the earliest date that any universal waste in the container became a waste or was received – marking or labeling each individual item of universal waste with the date it became waste or was received – maintaining an inventory system onsite that identifies the date each universal waste became a waste or was received

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	– maintaining an inventory system onsite that identifies the earliest date that any universal waste in a group of universal waste items or a group of containers of universal waste became a waste or was received – placing the universal waste in a specific accumulation area and identifying the earliest date that any universal waste in the area became a waste or was received – any other method which clearly demonstrates the length of time that the universal waste has been accumulated from the date that it becomes a waste or was received.
HW.125.3. Small quantity handlers of universal waste are required to handle releases according to specific procedures (40 CFR 273.17).	Verify that all releases of universal waste and other universal waste residues are immediately contained. Verify that the facility determines if the material resulting from the release is a hazardous waste.

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SMALL QUANTITY UNIVERSAL WASTE HANDLERS **HW.130** **Specific Wastes**	(NOTE: The following waste may, at the option of the generator, be man aged under the requirements of 40 CFR 273: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.) (NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)
HW.130.1. Small quantity handlers of universal waste are required to manage universal waste batteries according to specific parameters (40 CFR 273.12, 273.13(a)(1), and 273.13(a)(2)).	(NOTE: A small quantity handler of universal waste is not required to notify the USEPA of universal waste handling activities.) (NOTE: Refer to the definition of "battery" and "waste battery".) Verify that universal waste batteries are managed in a way that prevents releases of any universal waste or component of a universal waste to the environment. Verify that batteries, which show evidence of leakage, spillage, or damage, that could cause leakage under reasonably foreseeable condition, are contained in a container. Verify that containers are closed, structurally sound, compatible with the contents of the battery, and lack evidence of leakage, spillage or damage that could cause leakage. Verify that, when conducting any of the following activities, the casing of each individual battery cell is not breached and remains intact and closed: – sorting batteries by type – mixing battery types in one container – discharging batteries so as to remove the electric charge – regenerating used batteries – disassembling batteries or battery packs into individual batteries or cells – removing batteries from consumer products

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	– removing electrolyte from batteries. (NOTE: Cells may be opened to remove electrolyte but must be immediately closed after removal.)
HW.130.2. Small quantity handlers of universal waste are required to manage the electrolyte from universal waste batteries according to specific parameters (40 CFR 273.12 and 273.13(a)(3)).	Verify that, if the small quantity universal waste handler removes electrolyte from batteries or generates other solid waste (e.g., battery pack materials, discarded consumer products) as a result of battery management activities, the handler determines if any of the wastes exhibit the characteristics of a hazardous waste. Verify that, if it does exhibit the characteristics of a hazardous waste, it is treated and handled as a hazardous waste. Verify that, if the electrolyte or other solid waste is not a hazardous waste, it is managed in accordance with any other applicable state and federal laws and regulations.
HW.130.3. Small quantity handlers of universal waste are required to manage universal waste pesticides according to specific parameters (40 CFR 273.12 and 273.13(b)).	(NOTE: A small quantity handler of universal waste is not required to notify the USEPA of universal waste handling activities.) (NOTE: Refer to the definition of "pesticide" and "waste pesticides".) Verify that universal waste pesticides are managed in a way that prevents releases of any universal waste or component of a universal waste to the environment. Verify that the pesticides are contained in one or more of the following: – a container that remains closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions – an inappropriate container that is overpacked in an appropriate container – a tank that meets the requirements of 40 CFR 265, Subpart J except for 265.197(c) (tank closure plans), 265.200 (waste analysis and trial tests), and 265.201 (requirements for SQGs) – a transport vehicle or vessel that is closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

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HW.130.4. Small quantity handlers of universal waste are required to manage universal waste thermostats according to specific parameters (40 CFR 273.12 and 273.13(c)).	(NOTE: A small quantity handler of universal waste is not required to notify the USEPA of universal waste handling activities.) (NOTE: Refer to the definition of "thermostat" and "waste thermostat".) Verify that universal waste thermostats are managed in a way that prevents releases of any universal waste or component of a universal waste to the environment. Verify that the thermostats are contained in a container that remains closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Verify that, if the handler removes the mercury containing ampules, the following are met: – the ampules are removed in a manner designed to prevent breakage of the ampule – ampules are removed only over, or in, a containment device – a mercury cleanup system is readily available to immediately transfer any mercury spills or leaks from the containment device to an appropriate container – there is immediate transfer of any mercury spills or leaks from broken ampules to an appropriate container – the area in which ampules are removed is well ventilated and monitored to ensure compliance with OSHA – employees removing ampules are thoroughly familiar with proper waste mercury handling and emergency procedures – removed ampules are stored in closed, non-leaking containers that are in good condition – removed ampules are packed in the container with packing materials adequate to prevent breakage during storing, handling, and transportation.
HW.130.5. Small quantity handlers of universal waste are required to manage the wastes from universal waste thermostats according to specific parameters (40 CFR 273.12 and 273.13(c)(3)).	Verify that, if the small quantity universal waste handler removes mercury containing ampules, the handler determines if the mercury or cleanup residues resulting from spills or leaks exhibit the characteristics of a hazardous waste. Verify that, if the small quantity universal waste handler removes mercury containing ampules, the handler determines if the solid waste generated (e.g. remaining thermostat units) exhibit the characteristics of a hazardous waste.

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	Verify that, if it does exhibit the characteristics of a hazardous waste, it is treated and handled as a hazardous waste. Verify that, if the mercury, residues, or other solid waste is not a hazardous waste, it is managed in accordance with any other applicable state and Federal laws and regulations.

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SMALL QUANTITY UNIVERSAL WASTE HANDLERS **HW.135** **Personnel Training**	(NOTE: The following waste may, at the option of the generator, be man aged under the requirements of 40 CFR 273: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.) (NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)
HW.135.1. Employees who handle or have responsibility for managing universal wastes are required to be trained (40 CFR 273.16).	Verify that employees have been trained in the proper handling and emergency response procedures.

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SMALL QUANTITY UNIVERSAL WASTE HANDLERS **HW.140** **Containers**	(NOTE: The following waste may, at the option of the generator, be managed under the requirements of 40 CFR 273: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.) (NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)
HW.140.1. Universal wastes are required to be labeled according to specific parameters (40 CFR 273.14).	Verify that universal waste batteries (each battery), or a container in which the batteries are contained, are labeled or marked clearly with any one of the following phrases: – UNIVERSAL WASTE - BATTERY(IES) – WASTE BATTERY(IES) – USED BATTERY(IES). Verify that containers or multiple container package units, tanks, transport vehicles or vessels in which recalled universal waste pesticides are contained are marked clearly with: – the label that was on or accompanied the product as sold or distributed – the words UNIVERSAL WASTE PESTICIDE(S) or WASTE PESTICIDE(S). Verify that the container, tanks, or transport vehicles or vessels in which unused pesticide products are contained are labeled or marked clearly with: – the label that was on the product when purchased, if still legible, or, if this is not feasible, the appropriate DOT label – an alternate label prescribed or designated by the waste pesticide collection program administered or recognized by a state

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	– the words UNIVERSAL WASTE - PESTICIDE(S) or WASTE PESTICIDE(S). Verify that universal waste thermostats or containers in which the thermostats are contained are labeled or marked clearly with one of the following phrases: – UNIVERSAL WASTE - MERCURY THERMOSTAT(S) – WASTE MERCURY THERMOSTAT(S) – USED MERCURY THERMOSTAT(S).

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SMALL QUANTITY UNIVERSAL WASTE HANDLERS **HW.150** **Transportation**	(NOTE: The following waste may, at the option of the generator, be managed under the requirements of 40 CFR 273: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.) (NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)
HW.150.1. Offsite shipments of universal waste from small quantity handlers is required to be done according to specific parameters (40 CFR 273.18 and 273.19).	Verify that small quantity handlers of universal waste do not send or take universal waste to anyplace other than another universal waste handler, a destination facility, or a foreign destination. (NOTE: If the handler self-transports universal waste, they have to comply with the requirements for transportation in 40 CFR 273.50 through 273.56 (see checklist items HW.185.1 through HW.185.6).) Verify that, if the universal waste being offered for offsite transportation meets the definition of hazardous materials under 49 CFR 171 through 180, it is placarded, packaged, and shipped according to DOT requirements. Verify that, prior to sending the waste offsite, the originating handler has ensured that the receiving handler agrees to receive the waste. Verify that, if the receiving handler rejects a waste shipment, the originating handler does one of the following: – receives the waste back when notified the shipment was rejected – agrees with the receiving handler on a destination facility to which the shipment will be sent. Verify that, if the receiving handler rejects a shipment, the receiving handler notifies the originating handler. Verify that, if a small quantity handler of universal waste receives a

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	shipment containing hazardous waste that is not universal waste, the handler immediately notifies the regional USEPA office of the illegal shipment and provides the name, phone numbers, and address of the originating shipper. (NOTE: If the handler receives a shipment of nonhazardous nonuniversal waste the handler may manage the waste in any way that is in compliance with federal, state, or local regulations.) (NOTE: A small quantity handler of universal waste is not required to keep records of shipments of universal waste.)
HW.150.2. Small quantity handlers of universal waste that send universal waste to a foreign destination are required to meet specific requirements (40 CFR 273.20).	Verify that the requirements in 40 CFR 262.53 (notification of intent to export), 262.56(a)(1) through (a)(4), (6) and (b) (annual reports), and 262.57 (recordkeeping) are met. Verify that the receiving country has consented to accept the waste through an Acknowledgment of Consent. Verify that a copy of the Acknowledgment of Consent is provided to the USEPA.

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LARGE QUANTITY UNIVERSAL WASTE HANDLER **HW.155** **General**	(NOTE: The following waste may, at the option of the generator, be man aged under the requirements of 40 CFR 273: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.) (NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)
HW.155.1. Large quantity handlers of universal waste, more than 5000 kg [11,111 lb] at any time, are prohibited from disposing or treating universal wastes (40 CFR 273.31).	Determine if the facility is a large quantity handler of universal waste. Verify that the facility does not dispose of universal wastes onsite. Verify that, except when responding to a release or performing waste management activities outlined in 40 CFR 273.13 (see checklist items HW.130.1 through HW.130.5), the facility does not dilute or treat universal waste.
HW.155.2. Large quantity handlers of universal waste are required to meet specific accumulation time limits (40 CFR 273.35).	Verify that universal waste is not accumulated for more than 1 yr from the date that the universal waste is generated, or received from another handler. (NOTE: The 1 yr limit may be exceeded if the cause is waiting for the accumulation of quantities necessary to facilitate proper recovery, treatment, or disposal.) Verify that the handler can demonstrate the length of time that the universal waste has been accumulated by one of the following methods: – placing the universal waste in a container and marking or labeling the container with the earliest date that any universal waste in the container became a waste or was received – marking or labeling each individual item of universal waste with the date it became waste or was received

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	– maintaining an inventory system onsite that identifies the date each universal waste became a waste or was received – maintaining an inventory system onsite that identifies the earliest date that any universal waste in a group of universal waste items or a group of containers of universal waste became a waste or was received – placing the universal waste in a specific accumulation area and identifying the earliest date that any universal waste in the area became a waste or was received – any other method which clearly demonstrates the length of time that the universal waste has been accumulated from the date that it becomes a waste or was received.
HW.155.3. Large quantity handlers of universal waste are required to handle releases according to specific procedures (40 CFR 273.37).	Verify that all releases of universal waste and other universal waste residues are immediately contained. Verify that the facility determines if the material resulting from the release is a hazardous waste.

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LARGE QUANTITY UNIVERSAL WASTE HANDLERS **HW.160** **Specific Wastes**	(NOTE: The following waste may, at the option of the generator, be man aged under the requirements of 40 CFR 273: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.) (NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – conditionally exempt small quantity generator wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)
HW.160.1. Large quantity handlers of universal waste are required to manage universal waste batteries according to specific parameters (40 CFR 273.33(a)(1) and 273.33(a)(2)).	(NOTE: Refer to the definition of "battery" and "waste battery".) Verify that universal waste batteries are managed in a way that prevents releases of any universal waste or component of a universal waste to the environment. Verify that batteries that show evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable condition are contained in a container. Verify that containers are closed, structurally sound, compatible with the contents of the battery, and lack evidence of leakage, spillage or damage that could cause leakage. Verify that, when conducting any of the following activities, the casing of each individual battery cell is not breached and remains intact and closed: – sorting batteries by type – mixing battery types in one container – discharging batteries so as to remove the electric charge – regenerating used batteries – disassembling batteries or battery packs into individual batteries or cells – removing batteries from consumer products – removing electrolyte from batteries.

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	(NOTE: Cells may be opened to remove electrolyte but must be immediately closed after removal.)
HW.160.2. Large quantity handlers of universal waste are required to manage the electrolyte from universal waste batteries according to specific parameters (40 CFR 273.33(a)(3)).	Verify that, if the large quantity universal waste handler removes electrolyte from batteries or generates other solid waste (e.g., battery pack materials, discarded consumer products) as a result of battery management activities, the handler determines if any of the wastes exhibit the characteristics of a hazardous waste. Verify that, if it does exhibit the characteristics of a hazardous waste, it is treated and handled as a hazardous waste. Verify that, if the electrolyte or other solid waste is not a hazardous waste, it is managed in accordance with any other applicable state and federal laws and regulations.
HW.160.3. Large quantity handlers of universal waste are required to manage universal waste pesticides according to specific parameters (40 CFR 273.33(b)).	(NOTE: Refer to the definition of "pesticide" and "waste pesticides".) Verify that universal waste pesticides are managed in a way that prevents releases of any universal waste or component of a universal waste to the environment. Verify that the pesticides are contained in one or more of the following: – a container that remains closed, structurally sound, compatible with the pesticide, and lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions – an inappropriate container that is overpacked in an appropriate container – a tank that meets the requirements of 40 CFR part 265, Subpart J except for 265.197(c) (tank closure plans), 265.200 (waste analysis and trial tests), and 265.201 (requirements for SQGs) – a transport vehicle or vessel that is closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

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HW.160.4. Large quantity handlers of universal waste are required to manage universal waste thermostats according to specific parameters (40 CFR 273.33(c)(1) and 273.33(c)(2)).	(NOTE: Refer to the definition of "thermostat" and "waste thermostat".) Verify that universal waste thermostats are managed in a way that prevents releases of any universal waste or component of a universal waste to the environment. Verify that the thermostats are contained in a container that remains closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Verify that, if the handler removes the mercury containing ampules, the following are met: – the ampules are removed in a manner designed to prevent breakage of the ampule – ampules are removed only over, or in, a containment device – a mercury cleanup system is readily available to immediately transfer any mercury spills or leaks from the containment device to an appropriate container – there is immediate transfer of any mercury spills or leaks from broken ampules to an appropriate container – the area in which ampules are removed is well ventilated and monitored to ensure compliance with OSHA – employees removing ampules are thoroughly familiar with proper waste mercury handling and emergency procedures – removed ampules are stored in closed, non-leaking containers that are in good condition – removed ampule are packed in the container with packing materials adequate to prevent breakage during storing, handling, and transportation.
HW.160.5. Large quantity handlers of universal waste are required to manage the wastes from universal waste thermostats according to specific parameters (40 CFR 273.33(c)(3)).	Verify that, if the large quantity universal waste handler removes mercury containing ampules, the handler determines if the mercury or cleanup residues resulting from spills or leaks exhibits the characteristics of a hazardous waste. Verify that, if the large quantity universal waste handler removes mercury containing ampules, the handler determines if the solid waste generated (e.g., remaining thermostat units) exhibits the characteristics of a hazardous waste. Verify that, if it does exhibit the characteristics of a hazardous waste,

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	it is treated and handled as a hazardous waste. Verify that, if the mercury, residues, or other solid waste is not a hazardous waste, it is managed in accordance with any other applicable state and federal laws and regulations.

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LARGE QUANTITY UNIVERSAL WASTE HANDLERS **HW.165** **Personnel Training**	(NOTE: The following waste may, at the option of the generator, be man aged under the requirements of 40 CFR 273: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – CESQG wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.) (NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – CESQG wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)
HW.165.1. Employees who handle or have responsibility for managing universal wastes are required to be trained (40 CFR 273.36).	Verify that employees have been trained in the proper handling and emergency response procedures.

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LARGE QUANTITY UNIVERSAL WASTE HANDLERS **HW.170** **Containers**	(NOTE: The following waste may, at the option of the generator, be man aged under the requirements of 40 CFR 273: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – CESQG wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.) (NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – CESQG wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)
HW.170.1. Universal wastes are required to be labeled according to specific parameters (40 CFR 273.34).	Verify that universal waste batteries (each battery), or a container in which the batteries are contained, are labeled or marked clearly with any one of the following phrases: – UNIVERSAL WASTE - BATTERY(IES) – WASTE BATTERY(IES) – USED BATTERY(IES). Verify that containers or multiple container package units, tanks, transport vehicles or vessels in which recalled universal waste pesticides are contained are marked clearly with: – the label that was on or accompanied the product as sold or distributed – the words UNIVERSAL WASTE PESTICIDE(S) or WASTE PESTICIDE(s). Verify that the container, tanks, or transport vehicles or vessels in which unused pesticide products are contained are labeled or marked clearly with: – the label that was on the product when purchased, if still legible, or, if this is not feasible, the appropriate DOT label – an alternate label prescribed or designated by the waste pesticide collection program administered or recognized by a state – the words UNIVERSAL WASTE - PESTICIDE(S) or WASTE PESTICIDE(S).

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	Verify that universal waste thermostats or containers in which the thermostats are contained are labeled or marked clearly with one of the following phrases: – UNIVERSAL WASTE - MERCURY THERMOSTAT(S) – WASTE MERCURY THERMOSTAT(S) – USED MERCURY THERMOSTAT(S).

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LARGE QUANTITY UNIVERSAL WASTE HANDLERS **HW.175** **Notification**	(NOTE: The following waste may, at the option of the generator, be managed under the requirements of 40 CFR 273: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – CESQG wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.) (NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – CESQG wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)
HW.175.1. Large quantity handlers of universal waste are required to perform specific notification activities (40 CFR 273.32).	Verify that the handler has sent written notification of universal waste management to the Regional Administrator and received an USEPA identification number before meeting or exceeding the 5000 kg (11,111 lb] storage limit. (NOTE: In the following circumstances, the handler is not required to notify the USEPA: – the handler has already notified the USEPA of hazardous waste activity, – recalled pesticides are being managed and notification has already been sent in under 40 CFR 165.) Verify that the notification includes: – the universal waste handlers name and mailing address – the name and business phone of the POC at the facility – the address or physical location of the universal waste management activities – a list of all types of universal waste managed by the handler – a statement indicating that the handler is accumulating more than 5000 kg [11,111 lb] of universal waste at one time and the types of universal waste that are accumulated above this quantity.

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LARGE QUANTITY UNIVERSAL WASTE HANDLERS **HW.180** **Transportation**	(NOTE: The following waste may, at the option of the generator, be man aged under the requirements of 40 CFR 273: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – CESQG wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.) (NOTE: When the following wastes are commingled with universal wastes, the commingled wastes must be managed under 40 CFR 273 as universal waste: – household wastes that are exempt under 40 CFR 261.4(b)(1) and are also the same type as the universal wastes defined in 273.6 – CESQG wastes that are exempt under 261.5 and are also the same types as the universal waste defined in 273.6.)
HW.180.1. Offsite shipments of universal waste from large quantity handlers is required to be done according to specific parameters (40 CFR 273.38).	Verify that large quantity handlers of universal waste do not send or take universal waste to anyplace other than another universal waste handler, a destination facility, or a foreign destination. (NOTE: If the handler self-transports universal waste, they have to comply with the requirements for transportation in 40 CFR 273.50 through 273.56 (see checklist items HW.185.1 through HW.185.6).) Verify that, if the universal waste being offered for offsite transportation meets the definition of hazardous materials under 49 CFR 171 through 180, it is placarded, packaged and shipped according to DOT requirements. Verify that, prior to sending the waste offsite, the originating handler has ensured that the receiving handler agrees to receive the waste. Verify that, if the receiving handler rejects a waste shipment, the originating handler does one of the following: – receives the waste back when notified the shipment was rejected – agrees with the receiving handler on a destination facility to which the shipment will be sent. Verify that, if the receiving handler rejects a shipment, the receiving handler notifies the originating handler. Verify that, if a large quantity handler of universal waste receives a

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	shipment containing hazardous waste that is not universal waste, the handler immediately notifies the regional USEPA office of the illegal shipment and provides the name, phone numbers, and address of the originating shipper. (NOTE: If the handler receives a shipment of non-hazardous non-universal waste the handler may manage the waste in any way that is in compliance with federal, state, or local regulations.)
HW.180.2. Large quantity handlers are required to track offsite shipments (40 CFR 273.39).	Verify that a record of each shipment of universal waste received at the facility is kept in one of the following: – a log – invoices – manifests – bill of lading – other shipping document. Verify that the record for each shipment received includes the following: – name and address of the originating handler or foreign shipper from who the waste was sent – the quantity of each type of universal waste received – the date of receipt of the shipment. Verify that a record of each shipment of universal waste shipped offsite is kept in one of the following: – a log – invoices – manifests – bill of lading – other shipping document. Verify that the record for each offsite shipment includes the following: – name and address of the handler, destination facility, or foreign destination to whom the universal waste was sent – the quantity of each type of universal waste shipped – the date the shipment left the facility. Verify that records are retained for 3 yr from the date of receipt of a shipment of universal waste.
HW.180.3. Large quantity	Verify that the requirements in 40 CFR 262.53 (notification of intent

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
handlers of universal waste that send universal waste to a foreign destination are required to meet specific requirements (40 CFR 273.20).	to export), 262.56(a)(1) through (a)(4), (6) and (b) (annual reports), and 262.57 (recordkeeping) are met. Verify that the receiving country has consented to accept the waste through an Acknowledgment of Consent. Verify that a copy of the Acknowledgment of Consent is provided to the USEPA.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
HW.185 **UNIVERSAL WASTE TRANSPORTER**	
HW.185.1. Universal waste transporters are prohibited from disposing or treating universal wastes (40 CFR 273.51).	Determine if the facility is a transporter of universal waste. Verify that the facility does not dispose of universal wastes onsite. Verify that, except when responding to a release or performing waste management activities outlined in 40 CFR 273.13 (see checklist items HW.130.1 through HW.130.5), the facility does not dilute or treat universal waste.
HW.185.2. Universal waste transporters are required to manage the waste they transport according to specific parameters (40 CFR 273.52).	Verify that the waste is managed according to applicable DOT regulations depending on whether it meets the criteria for definition as a hazardous material or as a hazardous waste.
HW.185.3. Universal waste transporters may only store the universal waste at a transfer facility for 10 days (40 CFR 273.53).	Verify that universal waste is not stored at a transfer facility for more than 10 days. (NOTE: If the waste is stored for more than 10 days, the transporter becomes a handler.)
HW.185.4. Universal waste transporters are required to handle releases according to specific procedures (40 CFR 273.54).	Verify that all releases of universal waste and other universal waste residues are immediately contained. Verify that the transporter determines if the material resulting from the release is a hazardous waste.
HW.185.5. Offsite	Verify that transporters of universal waste do not send or take

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shipments of universal waste transporters are required to be done according to specific parameters (40 CFR 273.18 and 273.19). **HW.185.6.** Transporters of universal waste that send universal waste to a foreign destination is required to meet specific requirements (40 CFR 273.56).	universal waste to anyplace other than a universal waste handler, a destination facility, or a foreign destination. Verify that, if the universal waste being offered for offsite transportation meets the definition of hazardous materials under 49 CFR 171 through 180, it is placarded, packaged and shipped according to DOT requirements. Verify that the transporter has determined that the shipment conforms to the USEPA Acknowledgment of Consent. Verify that a copy of the USEPA Acknowledgment of Consent accompanies the shipment. Verify that appropriate measures are taken to ensure the universal waste is delivered to the facility designated by the person initiating the shipment.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
HW.190 **UNIVERSAL WASTE DESTINATION FACILITIES**	(NOTE: A destination facility has to meet all the applicable requirements in 40 CFR parts 264, 265, 266, 270, and 124 in addition to the requirements outlined here.)
HW.190.1. Destination facilities which recycle a particular universal waste without storing the universal waste prior to recycling are required to meet specific requirements (40 CFR 273.60).	Verify that the facility meets the following requirements: – notification requirements under Section 3010 of RCRA – 40 CFR 265.71 and 265.72 concerning manifests – 40 CFR 264.1030 through 264.1049 or 265.1030 through 265.1049 concerning air emissions from process vents (see checklist items in the category HW.85) – 40 CFR 264.1050 through 264.1079 or 265.1050 through 265.1079 concerning air emission standards for equipment leaks (see checklist items in category HW.90).
HW.190.2. Destination facilities are required to meet specific standards in relation to offsite shipments of universal waste (40 CFR 273.61).	Verify that the destination facility does not send or take universal waste to a place other than a universal waste handler, another destination facility, or foreign destination. Verify that, if the destination facility reject a shipment or portion of a shipment, they contact the shipper to notify him of the rejection and discuss reshipment of the load. Verify that the destination facility does one of the following: – sends the shipment back to the original shipper – sends the shipment to another destination facility if agreed upon by the shipper and the holding destination facility. Verify that, if a destination facility receives a shipment containing hazardous waste that is not universal waste, the facility immediately notifies the regional USEPA office of the illegal shipment and provides the name, phone numbers, and address of the originating shipper. (NOTE: If the facility receives a shipment of nonhazardous nonuniversal waste the facility may manage the waste in any way that is in compliance with federal, state, or local regulations.)
HW.190.3. Destination	Verify that a record of each shipment of universal waste received at

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facilities are required to track universal waste shipments (40 CFR 273.62).	the facility is kept in one of the following: – a log – invoices – manifests – bill of lading – other shipping document. Verify that the record for each shipment received includes the following: – name and address of the originating handler or foreign source from who the waste was sent – the quantity of each type of universal waste received – the date of receipt of the shipment. Verify that records are retained for 3 yr from the date of receipt of a shipment of universal waste.

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CLEANUP SITES
 	
HW.200
General
 	
HW.200.1. When a facility has a hazardous substance contaminated site which might require CERCLA response actions, a removal site evaluation is required to be done (40 CFR 300.410).
	Determine if the facility has a contaminated site which might need to undergo CERCLA response actions.
	
	Verify that a removal site evaluation is done as quickly as possible.
	
	(NOTE: In response to a petition by potentially affected people, the facility may perform a removal preliminary assessment based on readily available information.)
	
	Verify that the removal site evaluation is not terminated until the following is determined:
	
	– there is no release
	– the source is neither a vessel or a facility (see definitions)
	– the release involves neither a hazardous substance, nor a pollutant that may present an imminent and substantial danger to the public health or welfare
	– the release is one of the following which is subject to limited response:
	  – it is of a naturally occurring substance in its unaltered form, or altered solely through naturally occurring processes or phenomena, from a location where it is naturally found
	  – it is from products that are a part of the structure of, and result in exposure within, residential buildings or business or community structures
	  – it is into public or private drinking water supplies due to deterioration of the system of ordinary use
	– the amount, quantity, or concentration released does not warrant federal response
	– a party responsible for the release, or any other person, is providing appropriate response, and on-scene monitoring by the government is not required.
	
	Verify that the results of the removal site evaluation are documented.
	
	Verify that, if natural resources are or may be injured by the release, state and federal trustees of the property are notified.
	
	(NOTE: The removal site evaluation may indicate that a removal

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	action is not required but that remediation action may be necessary.)
HW.200.2. Sites which are going to undergo cleanup that pose a threat to human health should be identified or demarcated (MP).	Verify that contaminated sites, which pose a threat to human health, are marked, fenced, or in some manner demarcated.
HW.200.3. When removal actions are required as a result of the site evaluation, specific actions must be taken (40 CFR 300.415(a) through 300.415(f)).	(NOTE: The requirements listed here do not apply to removal studies and investigations conducted pursuant to Section 104(b) of CERCLA.) Verify that, when it is determined that removal actions are appropriate, the actions begin as soon as possible. Verify that, when there is a planning period of at least 6 mo before onsite activities are initiated, the following are done: – an engineering evaluation/cost analysis (EE/CA) or its equivalent is done – sampling and analysis plans are developed if environmental samples are going to be collected. (NOTE: Examples of removal actions include the following: – fences, warning signs, or other security and site control precautions – drainage controls – stabilization of berms, dikes, or impoundments or drainage or closing of lagoons – capping of contaminated soils or sludges – using chemicals or other materials to retard the spread of the contamination – excavation, consolidation, or removal of highly contaminated soils from drainage or other areas – removal of drums, barrels, tanks or other bulk containers – containment, treatment, disposal or incineration of hazardous materials – provision of alternate water supply.)
HW.200.4. After a	Verify that the RD/RA activities meet the requirements outlined in the

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decision has been made, the remedial design/remedial action (RD/RA) is required to be in conformance with the remedy selected and set forth in the record of decision (ROD) or other decision document (40 CFR 300.435).	ROD or interagency agreement (IAG), including meeting deadlines.
HW.200.5. A remedial site evaluation consists of a remedial preliminary assessment (PA) and a remedial site inspection (SI) (40 CFR 300.420).	(NOTE: The principal model for a PA is Guidance for Performing Preliminary Assessments Under CERCLA, EPA/540/G91-013.) Verify that the remedial PA includes the following: – a review of existing information about a release such as information on the pathways of exposure, exposure targets, and source – offsite reconnaissance as appropriate – onsite reconnaissance as appropriate. Verify that a remedial PA is done for all sites at the facility listed in CERCLIS. Verify that a PA report is developed that includes: – a description of the release – a description of the probable nature of the release – a recommendation on whether further action is warranted, which lead agency should conduct further action and whether a SI or removal action or both should be undertaken. Verify that a remedial SI is done when a PA is inconclusive in order to: – eliminate from further consideration releases that pose no significant threat – determine the potential need for removal action – collect or develop additional data to evaluate the release. Verify that the remedial SI builds upon information gathered in the remedial PA and involves, as appropriate both on and offsite field investigatory efforts and sampling. Verify that, prior to conducting field sampling as a part of the SI, a

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	sampling and analysis plan is developed. Verify that, upon completion of the remedial SI, a report is generated that includes: – a description/history/nature of waste handling – a description of known contaminants – a description of known pathways of contaminated migration – an identification and description of human and environmental targets – a recommendation on whether further action is warranted.
HW.200.6. When a remedial investigation/ feasibility study (RI/FS) is done to assess site conditions and evaluate alternatives, specific tasks are required as a part of the RI/FS (40 CFR 300.430(a)(2)).	Verify that the RI/FS includes the following activities: – assembling and evaluating data on the site, including the results of any removal actions, remedial preliminary assessment and site inspections, and NPL listing process – evaluation of the data and development of conceptual site understanding or model – identification of response scenarios and potentially applicable technologies and operable units that may address site problems – identification of the need for treatability studies – identification of the type, quantity, and quality of data that will be collected to support decisions regarding remedial response activities – site specific health and safety plans – notification of state and Federal trustees if natural resources are or may be injured by the release – sampling and analysis plans – initial identification of potential state and Federal ARARs and as appropriate, other criteria, advisories, or guidance to be considered. Verify that the ROD and proposed plans have also been reviewed. Verify that the scope and timing of these activities is tailored to the nature and complexity of the problem and the response alternatives being considered.

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CLEANUP SITES **HW.205** **Administrative Record**	(NOTE: The requirements for an administrative record applies to all response actions taken under section 104 of CERCLA or sought, secured, or ordered administratively or judicially under section 106 of CERCLA as follows: – remedial actions where a remedial investigation started after the promulgation of the regulations concerning the administrative record – removal actions where the action memorandum is signed after the promulgation of these requirements.)
HW.205.1. The administrative record is required to be located at the office of the facility or other central location and made available for public review (40 CFR 300.805).	Verify that an administrative record has been established at the facility or other central location. Verify that a copy of the documents are made available for public inspection at or near the site except in the following cases: – sampling and testing data, quality control and quality assurance documents, and chain of custody forms need not be located at or near the site if the index to the administrative record indicates the location and availability of this information – guidance documents not generated specifically for the site need not be located at or near the site if they are maintained at the central location and the index indicate the location and availability of these documents – publicly available technical literature not specific to the site need not be located at or near the site if it is maintained in a central location and the index indicates the location and availability of the information – documents included in the confidential portion of the administrative record – the administrative record for a removal action where the release, or threat of a release, requires that onsite removal activity occurs within hours of the determination that removal is appropriate and onsite removal activities stop within 30 days of starting need be available only at the central location.
HW.205.2. The	(NOTE: This requirement is a part of a one-time critical removal

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administrative record must be made available for public inspection when the engineering evaluation/cost analysis (EE/CA) is made available for public comment (40 CFR 300.815 and 300.820).	action.) Verify that, if it is determined that a removal action is appropriate and that a planning period of 6 mo exists before onsite removal action, the following is done: – the administrative record is made available for public inspection when the EE/CA is made available – a notice of the availability of the administrative file is published in a newspaper of general circulation – a public comment period is provided for – a written response to significant comments is included in the administrative file – public participation procedures as outlined in 40 CFR 300.415(m) (see checklist item HW.210.1) are done. Verify that, if it is determined that a removal action is appropriate and there is not a planning period of 6 mo, the following is done: – the administrative record file is made public no later than 60 days after the start of onsite removal activity – a notice of availability is published in a local newspaper of general circulation – a public comment period of at least 30 days is provided for beginning at the time the administrative record is made available to the public – a written response to significant comments is placed in the administrative file.

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HW.210
Community Relations
 	
HW.210.1. In the case of a removal action, specific community relations activities are required to be done (40 CFR 300.415(m) and CERCLA Section 300.40(m)(1)).
	Verify that, if the facility has conducted a removal action, the facility has appointed a spokesperson.
	
	Verify that, when it is determined based on the site evaluation, that removal is appropriate and less than 6 mo exists before onsite removal activity begins, the following is done:
	
	– a notice of availability of the administrative record is published in a major local newspaper of general circulation within 60 day of the start of removal activity
	– a public comment period of not less than 30 days is provided from the time the administrative record file is made available for public inspection
	– a written response is prepared for significant comments.
	
	Verify that, for removal actions where onsite actions are expected to extend beyond 120 days from the start of onsite removal activities, the following is done by the end of the 120 day period:
	
	– local officials, community residents, public interest groups, or other interested parties are interviewed to solicit their concerns and how they would like to be involved in the Superfund process
	– prepare a formal community relations plan (CRP) specifying actions that will be taken
	– establish at least one local information repository at or near the location of the response action.
	
	Verify that, when there is a planning period of at least 6 mo prior to the start of onsite removal actions, the following are done:
	
	– prior to the completion of the EE/CA:
	  – local officials, community residents, public interest groups, or other interested parties are interviewed to solicit their concerns and how they would like to be involved in the Superfund process
	  – prepare a formal CRP specifying actions that will be taken
	  – establish at least one local information repository at or near the location of the response action no later than when the EE/CA approval memo is signed

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	– publish a notice of availability and brief description of the EE/CA in a major local newspaper of general circulation – provide a reasonable opportunity of not less than 30 days for comments – prepare a written response to comments.
HW.210.2. Specific community relations activities are required to occur in relation to a remedial investigation (40 CFR 300.430(c)).	(NOTE: These community relations requirements apply to all remedial activities undertaken pursuant to CERCLA section 104 and to section 106 or section 122 consent orders or decrees, or section 106 administrative orders.) Verify that the following are done prior to starting field work for remedial investigations: – local officials, community residents, public interest groups, or other interested parties are interviewed to solicit their concerns and how they would like to be involved in the Superfund process – prepare a formal Community Relations Plan (CRP) specifying actions that will be taken – establish at least one local information repository at or near the location of the response action – inform the community of the availability of technical assistance grants.
HW.210.3. During the process of selecting a remedy, specific community relations activities are required to occur (40 CFR 300.430(f)(3)).	Verify that after preparation of the proposed plan, the following activities are done: – publication of a notice of availability of the proposed plan in a major local newspaper of general circulation – the proposed plan and supporting analysis and information are made available in the administrative record – at least 30 days is provided for oral and written comments – the opportunity for a public meeting is provided during the public comment period at or near the site at issue – creation of a transcript of the public meeting and the transcript is made available to the public – preparation of a written summary of the significant comments, criticisms, and new relevant information submitted during the comment period and the lead agency's response to each.

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	Verify that, if additional information which has a significant impact becomes available after the publication of the proposed plan and prior to the adoption of the selected remedy in the record decision, the facility: – includes a discussion in the ROD/decision document (DD) of the changes and reasons for changes – seeks additional public comment on the revised proposed plan. (NOTE: ROD is only appropriate for NPL, non-NPL sites still require a DD.)
HW.210.4. When the ROD/DD is signed, a notice of availability must be published and the record made available for public inspection (40 CFR 300.430(f)(6)).	Verify that, when the ROD/DD was signed, a notice was published in a major local newspaper of general circulation. Verify that the ROD/DD is available for public inspection and copying at or near the facility prior to the start of any remedial activities.
HW.210.5. Specific community relations activities are required to occur during the remedial design/remedial action (RD/RA) phase (40 CFR 300.435(c)).	Verify that, if the RA or enforcement action taken, or the settlement or consent decree entered into, differs significantly from the remedy selected in the ROD with respect to cost, scope, or performance, one of the following is done: – publish an explanation of the significant differences – propose an amendment to the ROD/DD. Verify that, after the completion of the final engineering design, a fact sheet is issued and a public briefing is done, as appropriate, prior to the initiation of the remedial action.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
CLEANUP SITES **HW.215** **NPL Sites**	
HW.215.1. Facilities with sites on the NPL are required to appoint a remedial project manager (40 CFR 300.120 (c) and 300.120(d)).	Verify that for releases of hazardous substances, pollutants, or contaminants on, or the sole source of the release is from, any FWS facility or vessel, the facility has an appointed remedial project manager and onscene coordinator.
HW.215.2. Federal facilities on the NPL are required to have an IAG with the USEPA (CERCLA, Section 120(e)(2) and 120(e)(4)).	Verify that an IAG is in place and contains the following: – a review of alternative remedial actions and selection of a remedial action by the head of the relevant department, agency, or instrumentality and the administrator or, if unable to reach agreement on selection of a remedial action, selection of the administrator – a schedule for the completion of the remedial action – arrangements for long term operation and maintenance of the facility. Verify that the terms of the IAG are being met.

Appendix 4-1
Hazardous Waste from Nonspecific Sources and from Specific Sources
(40 CFR 261.31 and 261.32)

Table I
Hazardous Waste from Nonspecific Sources

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
	Generic	
F001	The spent halogenated solvents used in degreasing. Trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and the chlorinated fluorocarbons; all spent solvent mixtures or blends used in degreasing containing before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents listed in F002, F004, F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(t)
F002	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2- trichloro-1,1,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures or blends containing, before use, a total of 10 percent or more by volume, of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(t)
F003	The spent nonhalogenated solvents, xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents and spent solvent mixtures.	(i)
F004	The spent nonhalogenated solvents, cresols and cresylic acid, and nitrobenzene; and the still bottoms from the recovery of these solvents.	(t)
F005	The following spent nonhalogenated solvents: toluene, methyl ethyl ketone, carbons disulfide, isobutanol, pyridine, benzene, 2-ethoxylethanol, and 2-nitropropane; all spent solvent mixtures or blends containing, before use, a total of 10 percent or more by volume of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these solvents.	(i,t)
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-	(t)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
	aluminum plating on carbon steel; (5) cleaning strip ping associated with tin, zinc, and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	
F007	Spent cyanide plating bath solution from electroplating operations.	(r,t)
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	(r,t)
F009	Spent stripping and cleaning bath solutions from electroplating operations when cyanides are used in the process.	(r,t)
F010	Quenching bath residues from oil baths from metal heat treating operations when cyanides are used in the process.	(r,t)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.	(r,t)
F012	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process.	(t)
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process.	(t)
F020	Wastes from use of tri-, or tetrachlorophenol, or intermediates used to produce its pesticide derivatives. **	(h)
F021	Wastes of pentachlorophenol or intermediates used to produce its derivatives. **	(h)
F022	Wastes, of tetra-, penta-, or hexachlorobenzenes under alkaline conditions. **	(h)
F023	Wastes, of tri and tetrachlorophenols. **	(t)
F024	Wastes, including but not limited to distillation residues, heavy ends, tars, and reactor cleanout wastes from the production of chlorinated aliphatic hydrocarbons, utilizing free radical catalyzed processes having carbon chain lengths from one to five (omits light ends, spent filters and filter aids, spent desiccants, wastewater, wastewater treatment sludges, spent catalysts and wastes listed in 40 CFR 261.32).	(t)
F025	Condensed light ends, spent filters aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These	(t)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
	chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.	
F026	Wastes of tetra-, penta-, or hexachlorobenzene under alkaline conditions.	(h)
F027	Discarded, unused formulations containing tri-, tetra-, or pentachlorophenol or discarded, unused formulations containing compounds derived from these chlorophenols (does not include hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component.	(h)
F028	Residues from incineration or thermal treatment of soil contaminated with USEPA hazardous waste Nos. F020, F021, F022, F023, F026, and F027.	(t)
F032	Wastewaters (except those that have not come into contact with process contaminants), process residue, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with 261.35 and the generator does not resume or initiate use of chlorophenolic formulations). This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.	(t)
F034	Wastewaters (except those that have come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use cresote formulations. This listing does not include K001 bottom sludge from the treatment of wastewater from wood preserving processes that use creosote and or phentachlorophenol.	(t)
F035	Wastewaters (except those that have come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chormium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.	(t)
F037	Petroleum refinery primary oil/water/solids separation sludge--any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum	(t)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
	refiners. This includes, but is not limited to, sludges generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from noncontact once through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units*** (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing.	
F038	Petroleum refinery secondary (emulsified) oil/water/solids separation sludge--any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from noncontact once- through cooling waters segregated for treatment from other process or oily cooling waters, sludges, and floats generated in aggressive biological treatment units*** (including sludges and floats generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 wastes are not included in this listing.	(t)
F039	Leachate resulting from the management of one or more of the following wastes and no other hazardous waste retains its hazardous waste number(s): F020, F021, F022, F023, F026, F027, and/or F028.	

* HAZARD CODES (Column 3)
t = toxic waste
i = ignitable waste
r = reactive waste
h = acute hazardous waste

** (Except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of hexachlorophene from highly purified 2,4,5-trichlorophenol.

*** Aggressive biological treatment units are defined as units that employ one of the following treatment methods: activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
aeration is a system of surface impoundments or tanks, in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the units employ a minimum of 6 hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the toxicity characteristic. NOTE: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The listing for plants that have previously used chlorophenolic formulations is administratively stayed whenever these wastes are covered by the F032, F034 or F035 listings. These stays will remain in effect until further administrative action is taken.		

Appendix 4-1
Table 2
Hazardous Wastes from Specific Sources
(40 CFR 261.32)
[Revised January 1999]

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
	Wood Preservation	
K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and /or pentachlorophenol.	(t)
	Inorganic Pigments	
K002	Wastewater treatment sludge from the production of chrome yellow and organe pigments.	(t)
K003	Wastewater treatment sludge from the production of molybdate orange pigments.	(t)
K004	Wastewater treatment sludge from the production of zinc yellow pigments.	(t)
K005	Wastewater treatment sludge from the production of chrome green pigments.	(t)
K006	Wastewater treatment sludge from the production of chrome green pigments (anhydrous and hydrated).	(t)
K007	Wastewater treatment sludge from the production of iron blue pigments.	(t)
K008	Oven residue from the production of chrome oxide green pigments.	(t)
	Organic Chemicals	
K009	Distillation bottoms from the production of acetaldehyde from ethylene.	(t)
K010	Distillation side cuts from the production of acetaldehyde from ethylene.	(t)
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile.	(r,t)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile.	(r,t)
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile.	(t)
K015	Still bottoms from the distillation of benzyl chloride.	(t)
K016	Heavy ends or distillation residues from the production of carbon tetrachloride.	(t)
K017	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin.	(t)
K018	Heavy ends from fractionation in ethyl chloride production.	(t)
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production.	(t)
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production.	(t)
K021	Aqueous spent antimony catalyst waste from fluoromethanes production.	(t)
K022	Distillation bottom tars from the production of phenol/acetone from cumene.	(t)
K023	Distillation light ends from the production of phthalic anhydride from naphthalene.	(t)
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene.	(t)
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene.	(t)
K026	Stripping still tails from the production of methyl ethyl pyridines.	(t)
K027	Centrifuge residue from toluene diisocyanate production.	(r,t)
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1- trichloroethane.	(t)
K029	Waste from the product stream stripper in the production of 1,1,1-trichloroethane.	(t)
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene.	(t)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
K083	Distillation bottoms from aniline production.	(t)
K085	Distillation of fractionation column bottoms from the production of chlorobenzene.	(t)
K093	Distillation light ends from the production of phthalic anhydride from ortho- xylene.	(t)
K094	Distillation bottoms from the production of phthalic anhydride from ortho- xylene.	(t)
K095	Distillation bottoms from the production of 1,1,1-trichloroethane.	(t)
K096	Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane.	(t)
K103	Process residues from aniline extraction from the production of aniline.	(t)
K104	Combined wastewater streams generated from nitrobenzene or aniline production.	(t)
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes.	(t)
K107	Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid.	(C,T)
K108	Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from car boxylic acid hydrazides.	(I,T)
K109	Spent filter cartridges from product purification from production of 1,1-dime thylhydrazine (UDMH) from carboxylic acid hydrazides.	(T)
K110	Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(T)
K111	Product washwaters from the production of dinitrotoluene via nitration of toluene.	(c,t)
K112	Reaction byproduct water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene.	(t)
K113	Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	(t)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
K114	Vicinals from the purification of toluenediamine in the production of toluene diamine.	(t)
K115	Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	(t)
K116	Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine.	(t)
K117	Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene.	(t)
K118	Spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(t)
K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(t)
K140	Floor sweepings, off-specification product and spent filter media from the production of 2,4,6-tribromophenol..	(t)
K149	Distillation bottoms from the production of alpha- (or methyl) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups. (This waste does not include still bottoms for the distillation of benzyl chloride.)	(t)
K150	Organic residuals, excluding spent carbon adsorbent, from the spent chlorine gas and hydrochloric acid recovery processes associated with the production of alpha- (or methyl) chlorinated toluenes, ring -chlorinated toluenes, benoyl chlorides, and compounds with mixtures of these functional groups.	(t)
K151	Wastewater treatment sludges, excluding neutralization and biological sludges, generated during the treatment of wastewaters from the production of alpha- (or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzyo; chlorides, and compounds with mixtures of these functional groups.	(t)
	Inorganic Chemicals	
K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.	(t)
K073	Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production.	(t)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
K106	Wastewater treatment sludge from the mercury cell process in chlorine production.	(t)
	Hazardous Waste from Explosives Manufacturing	
K044	Wastewater treatment sludge from the manufacturing and processing of explosives.	(r)
K045	Spent carbon from the treatment of wastewater containing explosives.	(r)
K046	Wastewater treatment sludges from the manufacturing, formulation, and loading of lead-based initiating compounds.	(t)
K047	Pink/red water from TNT operations.	(t)
NOTE: Hazardous waste created from the production of pesticides, petroleum refining, coking, ink formulation, the production of: iron and steel, primary copper, primary lead, primary zinc, primary aluminum, ferroalloys, veterinary pharmaceuticals, and secondary lead are not included in this table due to their nonapplicability at FWS facilities.		
	Petroleum Refining	
K169	Crude oil storage tank sediment from petroleum refining operations.	(t)
K170	Clarified slurry oil tank sediment and/or in-line filter/separation solids from petroleum refining operations.	(t)
K171	Spent Hydrotreating catalyst from petroleum refining operations, including guard beds used to desulfurize feeds to other catalytic reactors (this listing does not include inert support media).	(i,t)
K172	Spent Hydrorefining catalyst from petroleum refining operations, including guard beds used to desulfurize feeds to other catalytic reactors (this listing does not include inert support media).	(i,t)
* HAZARD CODES (Column 3) t = toxic waste i = ignitable waste r = reactive waste h = acute hazardous waste		

Appendix 4-2

Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Toxic Wastes
(40 CFR 261.33(f))
[Revised June 1998]

(COMMENT: primary hazardous properties of these materials have been indicated by the letter (t) (toxicity), (r) (reactivity), (i) (ignitibility), and (c) (corrosivity); absence of a letter indicates that the compound is only listed for acute toxicity.)

USEPA Hazardous Waste Number	Substance
U394	A2213
U001	acetaldehyde (i)
U034	acetaldehyde, trichloro-
U187	acetamide, N-(4-ethoxyphenyl)-
U005	acetamide, N-9H-fluoren-2-y1-
U240	acetic acid, (2,4-dichloropheoxy)-, salts, and esters
U112	acetic acid, ethyl ester (i)
U144	acetic acid, lead(2+) salt
U214	acetic acid, thallium(1+) salt
see F027	acetic acid, (2,4,5-trichlorophenoxy)-
U002	acetone (i)
U003	acetonitrile (i, t)
U004	acetophenone
U005	2-acetylaminoflourene
U006	acetyl chloride (c, r, t)
U007	acrylamide
U008	acrylic acid (i)
U009	acrylonitrile
U011	amitrole
U012	aniline (i, t)

USEPA Hazardous Waste Number	Substance
U136	arsenic acid, dimethyl-
U014	auramine
U015	azaserine
U010	azirino(2,3,3,4(pyrrolo(1,2-a)indole -4,7-dione, 6-amino- 8-[((aminocarbonyl)oxy)methyl]-1,1a,2,8,8a,8b- hexahydro-8a-methoxy-5-methyl-,
U280	barban
U278	bendiocarb
U364	bendiocarb phenol
U271	benomyl
U157	benz[j]aceanthrylene, 1,2-dihydro-3- methyl-
U016	benza[c]ridine
U017	benzal chloride
U192	benzamide, 3,5-dichloro-n- (1,1-diethyl-2-propynyl-
U018	benz[a]anthracene
U094	1,2-benzanthracene, 7,12-dimethyl-
U012	benzenamine (i,t)
U014	benzenamine, 4,4-carbonimidoylbis(N,N-dimethyl-
U049	benzenamine, 4-chloro-2-methyl-,hydrochloride
U093	benzenamine, N,N-dimethyl-4-(phenylazo)-
U328	benzenamine, 2-methyl-
U353	benzenamine, 4-methyl-
U158	benzenamine, 4,4-methylenebis(2-chloro-
U222	benzenamine, 2-methyl-, hydrochloride
U181	benzenamine, 2,-methyl-5-nitro
U019	benzene (i, t)
U038	benzeneacetic acid, 4-chloro-alpha-(4-

USEPA Hazardous Waste Number	Substance
	chlorophenyl)- alpha-hydroxy, ethyl ester
U030	benzene, 1-bromo-4-phenoxy-
U035	benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-
U037	benzene, chloro-
U221	benzenediamine, ar-methyl-
U028	1,2-benzendicarboxylic acid, [bis(2-ethyl-hexyl)]ester
U069	1,2-benzenedicarboxylic acid, dibutyl ester
U088	1,2-benzenedicarboxylic acid, diethyl ester
U102	1,2-benzendicarboxylic acid, dimethyl ester
U107	1,2-benzenedicarboxylic acid, dioctyl ester
U070	benzene, 1,2-dichloro-
U071	benzene, 1,3-dichloro-
U072	benzene, 1,4-dichloro-
U060	benzene, 1,1'- (2,2-dichloroethylidene) bis[4-chloro-
U017	benzene, (dichloromethyl)-
U223	benzene, 1,3-diisocyanatomethyl- (r,t)
U239	benzene, dimethyl-(i,t)
U201	1,3-benzenediol
U127	benzene, hexachloro-
U056	benzene, hexahydro- (i)
U220	benzene, methyl-
U105	benzene, 1-methyl-2,4-dinitro-
U106	benzene, 2-methyl-1,3-dinitro-
U055	benzene, (1-methylethyl)-(i)
U169	benzene, nitro- (i,t)

USEPA Hazardous Waste Number	Substance
U183	Benzene, pentachloro-
U185	benzene, pentachloronitro-
U020	benzenesulfonic acid chloride (c,r)
U020	benzenesulfonyl chloride (c,r)
U207	benzene, 1,2,4,5-tetrachloro-
U061	benzene, 1,1'-(2,2,2- trichloroethylidene) bis[4-chloro
U247	benzene, 1,1'(2,2,2- trichloroethylidene)[4-methoxy-
U023	benzene, (trichloromethyl)-
U234	benzene, 1,3,5-trinitro-
U021	benzidine
U202	1,2-benzisothiazolin-3-one, 1,1-dioxide, and salts
U278	1,3-benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate
U364	1,3-benzodioxol-4-ol, 2,2-dimethyl-,
U203	1,3-benzodioxole, 5-(2-propenyl)-
U141	1,3-benzodioxole, 5-(1-propenyl)-
U090	1,3-benzodioxole, 5-propyl-
U367	benzofuranol, 2,3-dihydro-2,2-dimethyl-
U064	benzo[rst]pentaphene
U248	2-H-1-benzopyran-2-on2, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, and salts, when present at concentrations of 0.3% or less
U022	benzo[a]pyrene
U197	p-benzoquinone
U023	benzotrichloride (c,r,t)
U085	2,2-bioxirane

USEPA Hazardous Waste Number	Substance
U021	(1,1-biphenyl)-4,4-diamine
U073	(1,1-biphenyl)-4,4-diamine, 3,3-dichloro
U091	(1,1-biphenyl)-4,4-diamine, 3,3- dimethoxy-
U095	(1,1-biphenyl)4,4-diamine, 3,3- dimethyl-
U225	bromoform
U030	4-bromophenyl phenyl ether
U128	1,3-butadiene, 1,1,2,3,4,4- hexachloro
U172	1-butanamine, N-butyl-N-nitroso-
U031	1-butanol (i)
U159	2-butanone (i,t)
U160	2-butanone peroxide (r,t)
U053	2-butenal
U074	2-butene, 1,4-dichloro- (i,t)
U143	2-butenoic acid, 2-methyl-, 7- [(2,3-dihydroxy-2-(1-methoxyethyl) -3-methyl-1-oxobutoxy)methyl] -2,3,5,7s-yrytshyfto-1- pyrrolizin-1-yl ester, [1S-[alpha(Z),7(2S,3R), 7aalpha]]-
U031	n-Butyl alcohol (i)
U136	cacodylic acid
U032	calcium chromate
U372	carbamic acid, 1H0benzimidazol-2-yl, methyl ester
U271	carbamic acid, [1-[(butylamino)carbonyl)-1H-benzimidazol-2-yl]-, methyl ester
U280	carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester
U238	carbamic acid, ethyl ester
U178	carbamic acid, methylnitroso- ethyl ester
U373	carbamic acid, phenyl-, 1-methylethyl ester

USEPA Hazardous Waste Number	Substance
U409	carbamic acid, [1,2-phenylenebis (iminocarbonothioyl)]bis-, dimethyl ester
U097	carbamic chloride, dimethyl-
U114	carbamodithioic acid, 1,2- ethanediylbis-, salts and esters
U062	carbamothioic acid, bis(1-methylethyl)-S- (2,3-dichloro-2- propenyl) ester
U389	carbamothioic acid, bis(1-methylethyl)-S-(2,3,3-trichloro- 2-propenyl) ester
U387	carbamothioic acid, dipropyl-, S-(phenylmethyl) ester
U279	carbaryl
U372	carbendazim
U367	carbofuran phenol
U215	carbonic acid, dithallium(1 +)salt
U033	carbonic difluoride
U156	carbonochlorodic acid, methyl ester (i,t)
U033	carbon oxyfluoride (r,t)
U211	carbon tetrachloride
U034	chloral
U035	chlorambucil
U036	chlordane, alpha and gamma isomers
U026	chlomaphazine
U037	chlorobenzene
U039	p-chloro-m-cresol
U042	2-chloroethyl vinyl ether
U044	chloroform
U046	chloromethyl methyl ether

USEPA Hazardous Waste Number	Substance
U047	beta-chloronaphthalene
U048	o-chlorophenol
U049	4-chloro-o-toluidine, hydrochloride
U032	chromic acid H2CrO4, calcium salt
U050	chrysene
U051	creosote
U052	cresols (cresylic acid)
U053	crotonaldehyde
U055	cumene (i)
U246	cyanogen bromide
U197	2,5-cyclohexadiene-1, 4-dione
U056	cyclohexane (i)
U129	cyclohexane 1,2,3,4,5,6- hexachloro-, (1alpha, 2alpha, 3beta, 4alpha, 6beta)-
U057	cyclohexanone (i)
U130	1,3-cyclopentadiene, 1,2,3,4,5,5- hexachloro-
U058	cyclophosphamide
U240	2,4-d, salts, and esters
U059	daunomycin
U060	DDD
U061	DDT
U062	diallate
U063	dibenz[a,h]anthracene
U064	dibenzo[a,i]pyrene
U066	1,2-dibromo-3-chloropropane
U069	dibutyl phthalate

USEPA Hazardous Waste Number	Substance
U070	o-Dichlorobenzene
U071	m-Dichlorobenzene
U072	p-Dichlorobenzene
U073	3,3'-dichlorobenzidine
U074	1,4-dichloro-2-butene (i,t)
U075	dichlorodifluoromethane
U078	1,1-dichloroethylene
U079	1,2-dichloroethylene
U025	dichloroethyl ether
U027	dichloroisopropyl ether
U024	dichloromethoxy ethane
U081	2,4-dichlorophenol
U082	2,6-dichlorophenol
U084	1,3-dichlorpropene
U085	1,2:3,4-diepoxybutane (i,t)
U395	diethylene glycol, dicarbamate
U108	1,4-diethyleneoxide
U028	diethylhexyl phthalate
U086	N,N-diethylhydrazine
U087	O,O-diethyl-s-methyl dithiophosphate
U088	diethyl phthalate
U089	diethylstilbestrol
U090	dihydrosafrole
U091	3,3'-dimethoxybenzidine
U092	dimethylamine (i)
U093	dimethylaminoazobenzene

USEPA Hazardous Waste Number	Substance
U094	7,12-dimethylbenz[a]anthracene
U095	3,3-dimethylbenzidine
U096	alpha,alpha-dimethylbenzylhydroperoxide (r)
U097	dimethylcarbamoyl chloride
U098	1,1-dimethylhydrazine
U099	1,2-dimethylhydrazine
U101	2,4-dimethylphenol
U102	dimethyl phthalate
U103	dimethyl sulfate
U105	2,4-dinitrotoluene
U106	2,6-dinitrotoluene
U107	di-n-octyl phthalate
U108	1,4-dioxane
U109	1,2-diphenylhydrazine
U110	dipropylamine (i)
U111	di-n-propylnitrosamine
U041	epichlorhydrin
U001	ethanal (i)
U404	ethanamine, N,N-diethyl-
U174	ethanamine, N-ethyl-N-nitroso-
U155	1,2-ethanediamine, n,n- dimethyl-n'-2-pyridinyl-n'-(2- thienylmethyl)-
U067	ethane, 1,2-dibromo-
U076	ethane, 1,1-dichloro-
U077	ethane, 1,2-dichloro-
U131	ethane, hexachloro-

USEPA Hazardous Waste Number	Substance
U024	ethane, 1,1-[methylenebis(oxy)] bis[2-chloro-
U117	ethane, 1,1-oxybis- (i)
U025	ethane 1,1-oxybis[2-chloro-
U184	ethane, pentachloro-
U208	ethane, 1,1,1,2-tetrachloro-
U209	ethane, 1,1,2,2-tetrachloro-
U218	ethanethioamide
U226	ethane, 1,1,1-trichloro
U359	ethane, 1,1,2-trichloro-
U227	ethane, trichloro
U410	ethanimidothioic acid, N,N'-[thiobis[(methylimino)carbonyloxy]]bis-, dimethyl ester
U394	ethanimidothioic acid, 2-(dimethylamino)-N-hydroxy-2- oxo-, methyl ester
U359	ethanol, 2-ethoxy-
U173	ethanol, 2,2'-(nitrosoimino)bis-
U395	Ethanol, 2,2'poxybis-, dicarbamate
U004	ethanone, 1-phenyl-
U043	ethene, chloro-
U042	ethene, (2-chloroethoxy-)
U078	ethene, 1,1-dichloro-
U079	ethene, 1,2-dichloro- (e)
U210	ethene, tetrachloro-
U228	ethene, trichloro
U112	ethyl acetate (i)
U113	ethyl acrylate (i)
U238	ethyl carbamate (urethane)

USEPA Hazardous Waste Number	Substance
U117	ethyl ether (i)
U114	ethylenebisdithiocarbamic acid, salts, and esters
U067	ethylene dibromide
U077	ethylene dichloride
U359	ethylene glycol monoethyl ether
U115	ethylene oxide (i,t)
U116	ethylenethiourea
U076	ethylidene dichloride
U118	ethyl methacrylate
U119	ethyl methanesulfonate
U120	fluoranthene
U122	formaldehyde
U123	formic acid (c,t)
U124	furan (i)
U125	2-furancarboxaldehyde (i)
U147	2,5-furandione
U213	furan, tetrahydro- (i)
U125	furfural (i)
U124	furfuran (i)
U206	glucopyranose, 2-deoxy-2 (3-methyl-3-nitrosoureido)-
U126	glycidylaldehyde
U163	guanidine, N-methyl-N'-nitro- N-nitroso-
U127	hexachlorobenzene
U128	hexachlorobutadiene
U130	hexachlorocyclopentadiene

USEPA Hazardous Waste Number	Substance
U131	hexachloroethane
U132	hexachlorophene
U243	hexachloropropene
U133	hydrazine (r,t)
U086	hydrazine, 1,2-diethyl-
U098	hydrazine, 1,1-dimethyl-
U099	hydrazine, 1,2-dimethyl-
U109	hydrazine, 1,2-diphenyl-
U134	hydrofluoric acid (c,t)
U134	hydrogen fluoride (c,t)
U135	hydrogen sulfide
U135	hydrogen sulfide
U096	hydroperoxide, 1-methyl-1-phenylethyl- (r)
U116	2-imidazolidinethione
U137	indeno(1,2,3-cd)pyrene
U190	1,3-isobenzofurandione
U140	isobutyl alcohol (i,t)
U141	isosafrole
U142	kepone
U143	lasiocarpine
U144	lead acetate
U146	lead, bis(acetato-O) tetrahydroxytri-
U145	lead phosphate
U146	lead subacetate
U129	lindane
U163	mnng

USEPA Hazardous Waste Number	Substance
U147	maleic anhydride
U148	maleic hydrazide
U149	malononitrile
U150	melphalan
U151	mercury
U152	methacrylonitrile (i,t)
U092	methanamine (N-methyl- (i)
U029	methane, bromo-
U045	methane, chloro- (i,t)
U046	methane, chloromethoxy-
U068	methane, dibromo-
U080	methane, dichloro-
U075	methane, dichlorodifluoro-
U138	methane, iodo-
U119	methanesulfonic acid, ethyl ester
U211	methane, tetrachloro-
U153	methanethiol (i,t)
U225	methane, tribromo-
U044	methane, trichloro-
U121	methane, trichlorofluoro-
U036	4-7-Methano-1Hindene, 1,2,4,5,6,7,8,8-ocachloro- 2,3,3a,4,7,7a-hexahydro
U154	methanol (i)
U155	methapyrilene
U142	1,3,4-metheno-2H- cyclobuta[cd]pentalen-2-one-1,1a,3,3a,4,5,5,5a,5b,6- decachlorooctahydro-
U247	methoxychlor

USEPA Hazardous Waste Number	Substance
U154	methyl alcohol (i)
U029	methyl bromide
U186	1-methylbutadiene (i)
U045	methyl chloride (i,t)
U156	methyl chlorocarbonate (i,t)
U226	methyl chloroform
U157	3-methylcholanthrene
U158	4,4-methylenebis-(2-chloroaniline)
U068	methylene bromide
U080	methylene chloride
U159	methyl ethyl ketone (mek) (i,t)
U160	methyl ethyl ketone peroxide (r,t)
U138	methyl iodide
U161	methyl isobutyl ketone (i)
U162	methyl methacrylate (i,t)
U161	4-methyl-2-pentanone (i)
U164	methylthiouracil
U010	mitomycin C
U059	5,12-Naphthacenedione, (Bs(cis)8- acetyl-10-[(3-amino- 2,3,6-trideoxy- alpha-L-lyxo-hexopyranosyl)oxyl]- 7- 8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-
U167	1-naphthalenamine
U168	2-naphthalenamine
U026	naphthalenamine, N,N'-bis (2-chloroethyl)-
U165	naphthalene
U047	naphthalene, 2-chloro-

USEPA Hazardous Waste Number	Substance
U166	1,4-naphthalenedione
U236	2,7-naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl-(1,1'-biphenyl)-bis(azo)bis(5-amino-4-hydroxy)-, tetrasodium salt
U279	1-Naphthalenol, methylcarbamate
U166	1,4-Naphthoquinone
U167	alpha-naphthylamine
U168	beta-naphthylamine
U217	nitric acid, thallium(1 +) salt (2-chloromethyl)-
U169	nitrobenzene (i,t)
U170	p-nitrophenol
U171	2-nitropropane (i,t)
U172	n-nitrosodi-n-butylamine
U173	n-nitrosodiethanolamine
U174	n-nitrosodiethylamine
U176	n-nitroso-n-ethylurea
U177	n-nitroso-n-methylurea
U178	n-nitroso-n-methylurethane
U179	n-nitrosopiperidine
U180	n-nitrosopyrrolidine
U181	5-nitro-o-toluidine
U193	1,2-oxathiolane, 2,2-dioxide
U058	2H-1,3,2-Oxazaphosphorine,2[bis(2-chloroethyl)amino]tetrahydro-, 2-oxide.
U115	oxirane (i,t)
U126	oxiranecarboxyaldehyde
U041	oxirane, 2-(chloromethyl)-

USEPA Hazardous Waste Number	Substance
U182	paraldehyde
U183	pentachlorobenzene
U184	pentachloroethane
U185	pentachloronitrobenzene
see F027	pentachlorophenol
U161	pentanol, 4-methyl-
U186	1,3-pentadiene (i)
U187	phenacetin
U188	phenol
U048	phenol, 2-chloro-
U039	phenol, 4-chloro-3-methyl-
U081	phenol, 2,4-dichloro-
U082	phenol, 2,6-dichloro-
U089	phenol, 4,4'-(1,2-diethyl- 1,2-ethenediyl)bis-,
U101	phenol, 2,4-dimethyl-
U052	phenol, methyl
U132	phenol, 2,2'-methylenebis [3,4,6-trichloro-
U411	phenol, 2-(1-methylethoxy)-, methylcarbamate
U170	phenol, 4-nitro-
see F027	phenol, pentachloro-
see F027	phenol, 2,3,4,6-tetrachloro-
see F027	phenol, 2,4,5-trichloro-
see F027	phenol, 2,4,6-trichloro-
U150	l-phenylalanine, 4- [bis(2-chloroethyl)amino]-
U145	phosphoric acid, lead salt
U087	phosphorodithioic acid, 0,0-diethyl S-methyl ester

USEPA Hazardous Waste Number	Substance
U189	phosphorus sulfide (r)
U190	phthalic anhydride
U191	2-picoline
U179	piperidine, 1-nitroso-
U192	pronamide
U194	1-propanamine (i,t)
U111	1-propanamine, n-nitroso-n-propyl-
U110	1-propanamine, n-propyl- (i)
U066	propane, 1,2-dibromo-3-chloro-
U083	propane, 1,2-dichloro-
U149	propanedinitrile
U171	propane, 2-nitro- (i,t)
U027	propane, 2,2-oxybis[2-chloro-
U193	1,3-propane sultone
see F027	propanoic acid, 2-(2,4,5- trichlorophenoxy)-
U235	1-propanol, 2,3-dibromo-, phosphate (3:1)
U140	1-propanol, 2-methyl- (i,t)
U002	2-propanone (i)
U007	2-propenamide
U084	1-propene, 1,3-dichloro-
U243	1-propene, 1,1,2,3,3,3-hexachloro-
U009	2-propenenitrile
U152	2-propanenitrile, 2-methyl- (i,t)
U008	2-propenoic acid (i)
U113	2-propenic acid, ethyl ester (i)
U118	2-propenoic acid, 2-methyl-, ethyl ester

USEPA Hazardous Waste Number	Substance
U162	2-propenoic acid, 2-methyl-, methyl ester (i,t)
U373	Propham
U411	Propoxur
U194	n-propylamine (i,t)
U083	propylene dichloride
U387	Prosulfocarb
U148	3,6-pyridazinedione, 1,2-dihydro-
U196	pyridine
U191	pyridine, 2-methyl-
U237	2,4(1H,3H)-pyrimidinedione, 5-[bis(2-chloroethyl)amino]-
U164	4(1H)-pyrimidinone, 2,3-dihydro-6-methyl 2-thioxo-
U180	pyrrolidine, 1-nitroso-
U200	reserpine
U201	resorcinol
U202	saccharin and salts
U203	safrole
U204	selenious acid
U204	selenium dioxide
U205	selenium sulfide
U205	selenium sulfide SeS2 (r,t)
U015	l-serine, diazoacetate (ester)
see F027	silvex (2,4,5-tp)
U206	streptozotocin
U103	sulfuric acid, dimethyl ester
U189	sulfur phosphide (r)

USEPA Hazardous Waste Number	Substance
see FO27	2,4,5-T
U207	1,2,4,5-tetrachlorobenzene
U208	1,1,1,2-tetrachloroethane
U209	1,1,2,2-tetrachloroethane
U210	tetrachloroethylene
see F027	2,3,4,6-tetrachlorophenol
U213	tetrahydrofuran (i)
U214	thallium (i) acetate
U215	thallium (i) carbonate
U216	thallium chloride
U216	thallium chloride TlCl
U217	thallium (i) nitrate
U218	thioacetamide
U410	thiodicarb
U153	thiomethanol (i,t)
U244	thioperoxydicarbonic diamide, tetramethyl-
U409	thiophanate-methyl
U219	thiourea
U244	thiuram
U220	toluene
U221	toluenediamine
U223	toluene diisocyanate (r,t)
U328	o-toluidine
U353	p-toluidine
U222	o-toluidine hydrochloride
U389	triallate

USEPA Hazardous Waste Number	Substance
U011	1H-1,2,4-triazol-3-amine
U408	2.4.6. tribromophenol
U227	1,1,2-trichloroethane
U228	trichloroethylene
U121	trichloromonofluoromethane
See F023	2,4,5-trichlorophenol
See F023	2,4,6-trichlorophenol
U404	triethylamine
U234	1,3,5-trinitrobenzene (r,t)
U182	1,3,5-trioxane, 2,4,6-trimethyl-
U235	tris(2,3-dibromopropyl)phosphate
U236	trypan blue
U237	uracil mustard
U176	urea, n-ethyl-n-nitroso-
U177	urea, n-methyl-n-nitroso-
U043	vinyl chloride
U248	Warfarin, when present at concentrations of .3% or less
U239	xylene (i)
U200	yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4, 5-trimethoxy-benzoyl)oxy], methyl ester
U249	Zinc phosphide, when present at concentrations of 10% or less

Appendix 4-3

Toxicity Characteristics Constituents and Regulatory Levels (40 CFR 261.24)

USEPA HW No.	Constituent	CAS No	Regulatory level (mg/L)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0
D023	o-Cresol	95-48-7	200.0 [1]
D024	m-Cresol	108-39-4	200.0 [1]
D025	p-Cresol	106-44-5	200.0 [1]
D026	Cresol		200.0 [1]
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	0.13 [2]
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its hydroxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	0.13 [2]
D033	Hexachloro-1,3-butadiene	87-68	0.50
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	5.0 [2]
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

[1] If o-, m-, and p-cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used.

[2] Quantitation limit is greater than the calculated regulatory level. Therefore, the quantitation limit becomes the regulatory level.

Appendix 4-4

Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Acute Hazardous Waste (40 CFR 261.33(a) through 261.33(e))

(COMMENT: Primary hazardous properties of these materials have been indicated by the letters (t) (toxicity), and (r) (reactivity); absence of a letter indicates that the compound only is listed for acute toxicity.)

Hazardous Waste Number	Substance	
P023	Acetaldehyde, chloro-	
P002	Acetamide, N-(aminothioxomethyl)-	
P057	Acetamide, 2-fluoro-	
P058	Acetic acid, fluoro-, sodium salt	
P002	1-Acetyl-2-thiourea	
P003	Acrolein	
P070	Aldicarb	
P203	Aldicarb sulfone	
P004	Aldrin	
P005	Allyl alcohol	
P006	Aluminum phosphide	(r,t)
P007	5-(Aminomethyl)-3-isoxazolol	
P008	4-Aminopyridine	
P009	Ammonium picrate	(r)
P119	Ammonium vanadate	
P099	Argebtate(1), bis(cyano-C)-, potassium	
P010	Arsenic acid H^3AsO^4	
P012	Arsenic oxide As^2O^3	
P011	Arsenic oxide As^2O^5	
P011	Arsenic pentoxide	
P012	Arsenic trioxide	
P038	Arsine, diethyl	
P036	Arsonous dichloride, phenyl	
P054	Aziridine	
P067	Aziridine, 2-methyl	
P013	Barium cyanide	
P024	Benzenamine, 4-chloro-	
P077	Benzenamine, 4-nitro-	
P028	Benzene, (chloromethyl)-	
P042	1,2-Benzenediol, 4-[1-hydroxy- 2-(methylamino)ethyl]-	(r)
P046	Benzeneethanamine, alpha,alpha-dimethyl-	(r)
P014	Benzenethiol	
P127	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl)-, methylcarbamate	
P188	Benzoic Acid	
P001	2H-1-Benzopyran-2-one,4-hydroxy-3- (3-oxo- 1-phenylbutyl)-, and salts when present at concentrations greater than	

Hazardous Waste Number	Substance	
	0.3%	
P028	Benzyl chloride	
P015	Beryllium powder	
P016	Bis(chloromethyl)ether	
P017	Bromoacetone	
P018	Brucine	
P045	2-Butanone, 3,3-dimethyl-1-(methylthio)-, O-(methylamino)carbonyl) oxime	
P021	Calcium cyanide	
P021	Calcium cyanide Ca(CN)2	
P189	Carbamic acid	
P191	Carbamic acid, dimethyl,	
P192	Carbamic Acid, dimethyl, 3-methyl-1-(1-methylethyl)-1H-pyrazol-5y) ester	
P193	Carbamic Acid, methyl, 3-methylphenyl ester	
P127	Carbofuran	
P022	Carbon disulfide	
P095	Carbonic dichloride	
P189	Carbosulfan	
P023	Chloroacetaldehyde	
P024	p-Chloroaniline	
P026	1-(o-Chlorophenyl)thiourea	
P027	3-Chloropropionitrile	
P029	Copper cyanide	
P029	Copper cyanide Cu(CN)	
P202	m-Cumenyl methylcarbamate	
P030	Cyanides (soluble cyanide salts), n.o.s.	
P031	Cyanogen	
P033	Cyanogen chloride	
P033	Cyanogen chloride (CN)Cl	
P034	2-Cyclohexyl-4,6-dinitrophenol	
P016	Dichloromethyl ether	
P036	Dichlorophenylarsine	
P037	Dieldrin	
P038	Diethylarsine	
P041	Diethyl-p-nitrophenyl phosphate	
P040	O,O-Diethyl O-pyrazinyl phosphorothioate	
P043	Diisopropyl fluorophosphate (DEP)	
P004	1,4:5,8-Dimethanonapthalene, 1,2,3,4,10,10- hexachloro-1,4,4a,5,8,8a- hexahydro-,(1alpha, 4alpha,4abeta,5alpha, 8alpha,8abeta)-	
P060	1,4:5,8-Dimethanonapthalene, 1,2,3,4,10,10- hexachloro-1,4,4a,5,8,8a- hexahydro-, (1alpha, 4alpha,4abeta,5beta, 8beta,8abeta)-	
P037	2,7:3,6-Dimethanonapth[2,3b]oxirane, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,	

Hazardous Waste Number	Substance	
	6,6a,7,7a- octahydro-,(1-aalpha,2beta,2aalpha,3beta, 6beta,6aalpha, 7beta,7aalpha)-	
P051	2,7:3,6-Dimethanonapth[2,3b]oxirane, octahydro- ,(1aalpha,2beta,2abeta,3alpha, 6alpha, 6abeta,7beta,7aalpha)-	
P044	Dimethoate	
P045	3,3-Dimethyl-1-(methylthio)-2-butanone, O- [(methylamino)carbonyl]oxime	
P046	alpha,alpha-Dimethylphenethylamine	
P191	Dimetilan	
P047	4,6-Dinitro-o-cresol and salts	
P048	2,4-Dinitrophenol	
P020	Dinoseb	
P085	Diphosphoramide, octamethyl-	
P111	Diphosphoric acid, tetraethyl ester	
P039	Disulfoton	
P049	Dithiobiuret	
P185	1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O-[(methylamino)-carbonyl]oxime	
P050	Endosulfan	
P088	Endothall	
P051	Endrin	
P051	Endrin and metabolites	
P042	Epinephrine	
P031	Ethanedinitrile	
P066	Ethanimidothioic acid, N-[[(methylamino)carbony] oxy]-, methyl ester	
P194	Ethanimidothioic acid, 2-(dimethylamino)-N- [[(methylamino) carbonyl]oxy]-2-oxo-, methyl ester	
P101	Ethyl cyanide	
P054	Ethyleneimine	
P097	Famphur	
P056	Fluorine	
P057	Fluoroacetamide	
P058	Fluoroacetic acid, sodium salt	
P198	Formetanate hydrochloride	
P197	Formparanate	
P065	Fulminic acid, mercury(2+)salt	(r,t)
P059	Heptachlor	
P062	Hexaethyl tetraphosphate	
P116	Hydrazinecarbothioamide	
P068	Hydrazine, methyl-	
P063	Hydrocyanic acid	
P063	Hydrogen cyanide	
P096	Hydrogen phosphide	
P064	Isocyanic acid, methyl ester	

Hazardous Waste Number	Substance	
P060	Isodrin	
P192	Isolan	
P202	3-Isopropylphenyl N-methylcarbamate	
P007	3(2H)-Isoxazolone, 5-(aminomethyl)-	
P196	Manganese, bis(dimethylcarbam	
P196	Manganese dimethyldithiocarbamate	
P092	Mercury (acetato-O)phenyl-	
P065	Mercury fulminate	(r,t)
P082	Methanamine, N-methyl-N-nitroso	
P197	Methanimidamide, N,N-dimethyl-N'-[2-methyl-4-[[(methylamino)carbonyl]oxy]phenyl)	
P064	Methane, isocyanato-	
P016	Methane, oxybis[chloro-	
P112	Methane, tetranitro-	(r)
P118	Methanethiol, trichloro-	
P050	6,9-Methano-2,4,3-benzodioxathlepen, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-,3-oxide	
P059	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	
P199	Methiocarb	
P066	Methomyl	
P068	Methyl hydrazine	
P064	Methyl isocyanate	
P069	2-Methyllactonitrile	
P071	Methyl parathion	
P190	Metolcarb	
P199	Mexacarbate	
P072	alpha-Naphthylthiourea	
P073	Nickel carbonyl	
P073	Nickel carbonyl, (T-4)-	
P074	Nickel cyanide	
P074	Nickel cyanide Ni (CN)2	
P075	Nicotine and salts	
P076	Nitric oxide	
P077	p-Nitroaniline	
P078	Nitrogen dioxide	
P076	Nitrogen oxide NO	
P078	Nitrogen oxide	
P081	Nitroglycerine	(r)
P082	N-Nitrosodimethylamine	
P084	N-Nitrosomethylvinylamine	
P074	Nickel cyanide	
P085	Octamethylpyrophosphoramide	
P087	Osmium oxide	
P087	Osmium tetroxide	
P088	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid	
P194	Oxamyl	
P089	Parathion	

Hazardous Waste Number	Substance	
P034	Phenol, 2-cyclohexyl-4,6-dinitro	
P128	Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate (ester)	
P199	Phenol, (3,5-dimethyl-4-methylthio)-=, methylcarbamate	
P048	Phenol, 2,4-dinitro	
P047	Phenol, 2-methyl-4,6-dinitro- and salts	
P202	Phenol, 3-(1-methylethyl)-, methyl carbamate	
P201	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate	
P020	Phenol, 2-(1-methylpropyl)-4,6-dinitro	
P009	Phenol, 2,4,6-trinitro-, ammonium salt	(r)
P092	Phenylmercury acetate	
P093	Phenylthiourea	
P094	Phorate	
P095	Phosgene	
P096	Phosphine	
P041	Phosphoric acid, diethyl 4- nitrophenyl ester	
P039	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester	
P094	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester	
P044	Phosphorodithioic acid, O,O-dimethyl S[2- (methylamino)-2-oxoethyl] ester	
P043	Phosphorofluoric acid, bis(1-methylethyl) -ester	
P089	Phosphorothioic acid, O,O-diethyl O- (4-nitrophenyl) ester	
P040	Phosphorothioic acid, O,O-diethyl O- pyrazinyl ester	
P097	Phosphorothioic acid, O-[4-[(dimethylamino) sulfonyl]phenyl] O,O-dimethyl ester	
P071	Phosphorothioic acid, O,O-dimethyl O-(4- nitrophenyl) ester	
P204	Physostigmine	
P188	Phosostigmine salicylate	
P110	Plumbane, tetraethyl-	
P098	Potassium cyanide	
P098	Potassium cyanide K(CN)	
P099	Potassium silver cyanide	
P201	Promecarb	
P203	Propanol, 2-methyl-2-(methyl-sulfonyl)-, O- [(methylamino)carbonyl) oxime	
P070	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime	
P101	Propanenitrile	
P027	Propanenitrile, 3-chloro-	
P069	Propanenitrile, 2-hydroxy-2-methyl	

Hazardous Waste Number	Substance	
P081	1,2,3-Propanetriol, trinitrate	(r)
P017	2-Propanone, 1-bromo-	
P102	Propargyl alcohol	
P003	2-Propenal	
P005	2-Propen- 1 -ol	
P067	1,2-Propylenimine	
P102	2-Propyn-1 -ol	
P008	4-Pyridinamine	
P075	Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-,(S)-, and salts	
P204	Pyrrolo(2,3-b)indol-5-ol, 1,2,3a,8,8a-hexahydro-1,3a,8-trimethyl-,methylcarbamate (ester), (3aS-cis)	
P114	Selenious acid, dithallium(1 +) salt	
P103	Selenourea	
P104	Silver cyanide	
P104	Silver cyanide Ag(CN)	
P105	Sodium azide	
P106	Sodium cyanide	
P106	Sodium cyanide Na(CN)	
P108	Strychnidin-10-one, and salts	
P018	Strychnidin 10-one, 2,3-dimethoxy-	
P108	Strychnine and salts	
P115	Sulfuric acid, dithallium(I) salt	
P109	Tetraethyldithiopyrophosphate	
P110	Tetraethyl lead	
P111	Tetraethylpyrophosphate	
P112	Tetranitromethane (r)	
P062	Tetraphosphoric acid, hexaethyl ester	
P113	Thallic oxide	
P113	Thallium(III) oxide	
P114	Thallium(I) selenite	
P115	Thallium(I) sulfate	
P109	Thiodiphosphoric acid, tetraethyl ester	
P045	Thiofanox	
P049	Thiomidodicarbonic diamide	
P014	Thiophenol	
P116	Thiosemicarbazide	
P026	Thiourea, (2-chlorophenyl)-	
P072	Thiourea, 1-naphthalenyl-	
P093	Thiourea, phenyl-	
P185	Tirpate	
P123	Toxaphene	
P118	Trichloromethanethiol	
P119	Vanadic acid, ammonium salt	
P120	Vanadium oxide V2O3	
P120	Vanadium pentoxide	
P084	Vinylamine, N-methyl-N-nitroso	
P001	Warfarin, and salts, when present at concentrations greater than 0.3%	
P205	Zinc, bis(dimethylcarbamodithioato-	

Hazardous Waste Number	Substance	
	S,S')-	
P121	Zinc cyanide	
P121	Zinc cyanide Zn(CN)2	
P122	Zinc phosphide Zn3P2, when present at concentrations greater than 0.10%	
P205	Ziram	

Appendix 4-5

Potentially Incompatible Hazardous Wastes
(40 CFR 264, Appendix V)

Substances in bold have detailed example lists on the next page.

If the material contains:	It may not be stored with any of the following:
Acid (pH below 2.0)	**Caustics** (pH above 12.5) **Reactive Metals** Alcohol Water Aldehydes Halogenated, Nitrated, or Unsaturated Hydrocarbons **Reactive Organic Compounds and Solvents** Spent Cyanide and Sulfide Solutions **Oxidizers**
Caustic (pH above 12.5)	**Acid** (pH below 2.0) **Reactive Metals** Alcohol Water Aldehydes Halogenated, Nitrated, or Unsaturated Hydrocarbons **Reactive Organic Compounds and Solvents**
Reactive Metals	**Caustics** **Acids** Alcohol Aldehydes Halogenated, Nitrated, or Unsaturated Hydrocarbons **Reactive Organic Compounds and Solvents** **Oxidizers**
Reactive Organic Compounds and Solvents	**Caustics** **Acids** **Reactive Metals**
Spent Cyanide and Sulfide Solutions	**Acids**
Oxidizers	Acetic or Other Organic Acids Concentrated Mineral Acids **Reactive Metals** **Reactive Organic Compounds and Solvents** **Ignitable [Flammable/Combustible] Wastes***

* "Ignitable" in this context refers to substances with a flashpoint below 140× °F, and includes:
Combustible substances, with a flashpoint below 140× °F
Flammable substances, with a flashpoint below 100× °F.

Some Deadly Combinations

Acids + Oil or Grease = Fire

Flammable Liquids + Hydrogen Peroxide = Fire/Explosion

Acids + Caustics = Heat/Spattering

Aluminum Powder + Ammonium Nitrate = Explosion

Caustics + Epoxies = Extreme Heats

Sodium Cyanide + Sulfuric Acid = Lethal Hydrogen Cyanide

Chlorine Gas + Acetylene = Explosion

Ammonia + Bleach = Noxious Fumes

In general: **Reactives** must be segregated from **Ignitables**

Acids must be segregated from **Caustics**
Corrosives should be segregated from **Flammables**
Oxidizers should be segregated from **EVERYTHING**
Many Corrosives are "Water Reactive"
Most **Organic Reactives** must be segregated from **Inorganic Reactives** (metals)

Ignitables (Flammables/Combustibles)	**Corrosives**	
	Acids	**Caustics**
Carburetor Cleaners Engine Cleaners Epoxy, Resins, Adhesives, and Rubber Cements Finishes Fuels Lacquers Paints Paint Thinners Paint Wastes Pesticides that contain Solvents (such as Methyl Alcohol, Ethyl Alcohol, Isopropyl Alcohol, Toluene, Xylene). Petroleum Solvents (Drycleaning Fluid) Solvents: Acetone Benzene Carbon Tetrachloride (Carbon Tet) Ethanol (Ethyl Alcohol) Ethyl Benzene Isopropanol (Isopropyl Alcohol) Kerosene (Fuel Oil #1) Methanol (Wood Alcohol) Methyl Ethyl Ketone (MEK) Petroleum Distillates Tetrahydrofuran (THF) Toluene (Methacide, Methylbenzene, Methylbenzol, Phenylmethane, Toluol, Antisal 1A) White Spirits (White Spirits, Mineral Spirits, Naptha) Xylene (Xylol) Stains Stripping Agents Varsol Waste Fuels Waste Ink Wax Removers Wood Cleaners	Battery Acids Degreasers and Engine Cleaners Etching Fluids Hydrobromic Acid Hydrochloric Acid (Muriatic Acid) Nitric Acid (<40%) (Aquafortis) Phosphoric Acid Rust Removers Sulfuric Acid (Oil of Vitriol)	Acetylene Sludge Alkaline Battery Acids Alkaline Cleaners Alkaline Degreasers Alkaline Etching Fluids Lime and Water Lime Wastewater Potassium Hydroxide (Caustic Potash) Rust Removers Sodium Hydroxide (Caustic Soda, Soda Lye)
	Reactive Metals Lithium (Batteries) Aluminum Beryllium Calcium Magnesium Sodium Zinc Powder	**Reactive Organic Compounds and Solutions** Alcohols Aldehydes Chromic Acids (from chrome plating, copper stripping and aluminum anodizing) Cyanides (from electroplating operations) Hypochlorides (from water treatment plants, swimming pools, sanitizing operations) Organic Peroxides (including Hydrogen Peroxide) Perchlorates Permanganates Sulfides
	Oxidizers Chlorine Gas Nitric Acid (>40%), aka Red Fuming Nitric Nitrates (Sodium Nitrate, Ammonium Nitrate) Perchlorates Perchloric Acid Perioxides Calcium Hypochlorite (>60%)	

Appendix 4-6

Recordkeeping, Notification, and/or Certification Requirements for 40 CFR 268 (40 CFR 268, Appendix X)

Entity	Scenario	Frequency	Recipient of notification	Recordkeeping, notification, and/ or certification requirements
Generator	A. Waste does not meet applicable treatment standards, or exceeds applicable prohibition levels (see 268.7(a)(1)	Each shipment	Treatment or storage facility	Notice must include: - USEPA hazardous waste number - constituents of concern - treatability group - manifest number\ - waste analysis data (where avail.)
	B. Waste can be disposed of without further treatment (meets applicable treatment standards or does not exceed prohibition levels upon generation (see 268.7(a)(2)).	Each shipment	Land disposal facility	Notice and certification statement that wastes meets applicable treatment standards or applicable prohibited levels. Notice must include: - USEPA hazardous waste number - constituents of concern - treatability group - manifest number\ - waste analysis data (where avail.) Certification statement required under 268.7(a)(2)(ii) that waste complies with treatment standards and prohibitions.
	C. Waste is subject to exemption from a prohibition on the type of land disposal utilized for the waste, such as a case-by-case extension under 268.5, an exemption under 268.6, or a nation-wide capacity variance (see 268.7(a)(3).	Each shipment	Receiving facility	Notice must include: –statement that the waste is not prohibited from land disposal –USEPA hazardous waste number –constituents of concern –treatability group –manifest number –waste analysis data (where avail.) –date the waste is subject ton prohibitions.
	D. Waste is being	Minimum	USEPA	Generator must develop, keep

Entity	Scenario	Frequency	Recipient of notification	Recordkeeping, notification, and/ or certification requirements
	accumulated in tanks or containers regulated under 40 CFR 262.34 and is being treated in such tanks or containers to meet applicable treatment standards (see 268.7(a)(4)).	of 30 days prior to treatment activity	Regional Administrator (or designated representative, or authorized State. Delivery must be verified	onsite, and follow a written waste analysis plan describing procedures used to comply with the treatment standards. If waste is shipped offsite, generator must also comply with notification requirement in 268.7(a)(2).
Generator	E. Generator is managing a lab pack containing certain wastes and wishes to use an alternative treatment standard (see 268.7(a)(8)).	Each shipment	Treatment facility	Notice in accordance with 268.7(a)(1), (a)(5),and (a)(6), where applicable. Certification in accordance with 268.7(a)(8).
	F. SQGs with tolling agreements	Initial shipment	Treatment facility	Must comply with applicable notification and certification requirements in 268.7(a) Generator must also retain copy of the notification and certification together with tolling agreement onsite for at least 3 yr after termination or expiration of the agreement.
	G. Generator has determined waste is a restricted waste based solely on his knowledge of the waste (see 268.7(a) (5)).	NA	Generator's file	All supporting data must be retained onsite in generator's files.
	H. Generator has determine waste is restricted based on testing waste or an extract (see 268.7(a) 5)).	NA	Generator's file	All waste analysis data must be retained onsite in generators files.
	I. Generator has determined that waste is excluded from the definition of hazardous or solid waste or exempt from Subtitle	One time	Generator's file	Notice of generation and subsequent exclusion from the definition of hazardous or solid waste, or exemption from Subtitle C regulation, and information regarding the

Entity	Scenario	Frequency	Recipient of notification	Recordkeeping, notification, and/ or certification requirements
	C regulation (see 268.7(a)(6)).			disposition of the waste.
	J. Generator (or treater) claims that hazardous debris is excluded from the definition of hazardous waste under 40 CFR 261.3(f)(1) (see 268.7(d)).	One time	USEPA Regional Administrator or authorized State. notification must be updated as necessary under 268.7(d)(2).	Notice must include: -- name and address of Subtitle D facility receiving treated debris -USEPA hazardous waste number and description of debris as initially generated -technology used to treat the debris. Certification and recordkeeping is in accordance with 268.7(d)(3).
Generator	K. Generator (or treater) claims that characteristic wastes are no longer hazardous (see 268.9(d)).	One time	Generator's (or treater's) files and USEPA Regional, Administrator or authorized State. Notifications must be updated as necessary under 268.9(d).	Notice must include: -name and address of Subtitle D facility receiving treated debris -USEPA hazardous waste number and description of debris as initially generated -treatability group -underlying hazardous constituents. Certification in accordance with 268.9(d)(2).
	L. Other recordkeeping requirements (see 268.7(a)(7)).	NA	Generator's files	Generator must retain a copy of all notices, certifications, demonstrations, waste analysis data, and other documentation produced pursuant to 268.7 onsite for at least 5 yr from the date that the waste was last sent to onsite or offsite treatment, storage, or disposal. This period is automatically extended during enforcement actions or as requested by the Administrator.
Treatment Facility	A. Waste shipped from treatment facility	Each shipment	Land disposal facility	Notice must include: -USEPA hazardous waste

Entity	Scenario	Frequency	Recipient of notification	Recordkeeping, notification, and/ or certification requirements
	to land disposal facility (see 268.7(b)(4) and (b)(5)).			number – constituents of concern – treatability group – manifest number – waste analysis data (where avail.) Applicable certification in accordance with 268.7(b)(5)(i), (ii), or (iii), stating that the waste or treatment residue has been treated in compliance with applicable treatment standards and prohibitions.
	B. Waste treatment residue from a treatment or storage facility will be further managed at a different treatment or storage facility (see 268.7(b)(6)).	Each shipment	Receiving facility	Treatment, storage, or disposal facility must comply with all notices and certification requirements applicable to generators.
Treatment Facility	C. Where wastes are recyclable materials used in a manner consisting disposal subject to 266.20(b) (see 268.7(b)(7)).	Each shipment	Regional Administrator (or delegated representative)	No notification to receiving facility required pursuant to 269.7(b)(4). Certification as described in 268.7(b)(5) and notice with information listed in 268.7(b)(4), except manifest number. Recycling facility must keep records of the name and location of each entity receiving hazardous waste-derived products.
Land Disposal Facility	A. Wastes accepted by land disposal facility (see 268.7(c)).	NA	NA	Maintain copies of notice and certification specified in 268.7(a) and (b).

Land Disposal Restricted Wastes and Their Effective Dates
(40 CFR 268, Appendix VII)

Part 1--Land Disposal Restricted Wastes and Their Effective Dates

Waste Code	Waste Category	Effective Date
California list	Liquid hazardous wastes, including free liquids associated with solid or sludge, containing free cyanides at concentrations greater than or equal to 1000 mg/L or certain metals or compounds of these metals greater than or equal to the prohibition levels.	8 July 1987
California list	Liquid (aqueous) hazardous wastes having a pH less than or equal to 2.	8 July 1987
California list	Dilute HOC wastewaters, defined as HOC-waste mixtures that are primarily water and that contain greater than or equal to 1000 mg/L but less than 10,000 mg/L.	8 July 1987
California list	Liquid hazardous waste containing PCBs greater than or equal to 50 ppm.	8 July 1987
California list	Other liquid and nonliquid hazardous wastes containing HOCs in total concentration greater than or equal to 1000 mg.	8 Nov 1988
D001[c]	All (except High TOC Ignitable Liquids)	9 Aug 1993
D001	High TOC Ignitable Liquids	8 Aug 1990
D002[c]	All	9 Aug 1993
D003[c]	All	8 July 1996
D004	Wastewater	8 Aug 1992
D004	Nonwastewaters	8 May 1992
D005	All	8 Aug 1990
D006	All	8 Aug 1990
D007	All	8 Aug 1990
D008	Lead materials before secondary smelting	8 May 1992
D008	All others	8 Aug 1990
D009	Nonwastewater	8 May 1992
D009	All others	8 Aug 1990
D010	All	8 Aug 1990
D011	All	8 Aug 1990
D012 (that exhibit the toxicity characteristic based on the TCLP)[d]	All	14 Dec 1994
D013(that exhibit the toxicity characteristic based on the TCLP)[d]	All	14 Dec 1994
D014(that exhibit the toxicity characteristic based on the TCLP)[d]	All	14 Dec 1994
D015 (that exhibit the toxicity characteristic based on the TCLP)[d]	All	14 Dec 1994

Waste Code	Waste Category	Effective Date
D016 (that exhibit the toxicity characteristic based on the TCLP)[d]	All	14 Dec 1994
D017 (that exhibit the toxicity characteristic based on the TCLP)[d]	All	14 Dec 1994
D018	Mixed with radioactive wastes	19 Sept 1996
D018	All others	19 Dec 1994
D019	Mixed with radioactive wastes	19 Sept 1996
D019	All others	19 Dec 1994
D020	Mixed with radioactive wastes	19 Sept 1996
D020	All others	19 Dec 1994
D021	Mixed with radioactive wastes	19 Sept 1996
D021	All others	19 Dec 1994
D022	Mixed with radioactive wastes	19 Sept 1996
D022	All others	19 Dec 1994
D023	Mixed with radioactive wastes	19 Sept 1996
D023	All others	19 Dec 1994
D024	Mixed with radioactive wastes	19 Sept 1996
D024	All others	19 Dec 1994
D025	Mixed with radioactive wastes	19 Sept 1996
D025	All others	19 Dec 1994
D026	Mixed with radioactive wastes	19 Sept 1996
D026	All others	19 Dec 1994
D027	Mixed with radioactive wastes	19 Sept 1996
D027	All others	19 Dec 1994
D028	Mixed with radioactive wastes	19 Sept 1996
D028	All others	19 Dec 1994

Waste Code	Waste Category	Effective Date
D029	Mixed with radioactive wastes	19 Sept 1996
D029	All others	19 Dec 1994
D030	Mixed with radioactive wastes	19 Sept 1996
D030	All others	19 Dec 1994
D031	Mixed with radioactive wastes	19 Sept 1996
D031	All others	19 Dec 1994
D032	Mixed with radioactive wastes	19 Sept 1996
D032	All others	19 Dec 1994
D033	Mixed with radioactive wastes	19 Sept 1996
D033	All others	19 Dec 1994
D034	Mixed with radioactive wastes	19 Sept 1996
D034	All others	19 Dec 1994
D035	Mixed with radioactive wastes	19 Sept 1996
D035	All others	19 Dec 1994
D036	Mixed with radioactive wastes	19 Sept 1996
D036	All others	19 Dec 1994
D037	Mixed with radioactive wastes	19 Sept 1996
D037	All others	19 Dec 1994
D038	Mixed with radioactive wastes	19 Sept 1996
D038	All others	19 Dec 1994
D039	Mixed with radioactive wastes	19 Sept 1996
D039	All others	19 Dec 1994
D040	Mixed with radioactive wastes	19 Sept 1996
D040	All others	19 Dec 1994
D041	Mixed with radioactive wastes	19 Sept 1996

Waste Code	Waste Category	Effective Date
D041	All others	19 Dec 1994
D042	Mixed with radioactive wastes	19 Sept 1996
D042	All others	19 Dec 1994
D043	Mixed with radioactive wastes	19 Sept 1996
D043	All others	19 Dec 1994
F001	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent- containing sludges and solids.	8 Nov 1988.
F001	All others	8 Nov 1986.
F002 (1,1,2 - trichloroethane)	Wastewater and nonwastewater	8 Aug 1990
F002	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent- containing sludges and solids.	8 Nov 1988
F002	All others	8 Nov 1986
F003	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent- containing sludges and solids.	8 Nov 1988
F003	All others	8 Nov 1986
F004	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent- containing sludges and solids.	8 Nov 1988
F004	All others	8 Nov 1986
F005 (benzene, 2-ethoxy ethanol, 2-nitropropane)	Wastewater and nonwastewater	8 Aug 1990
F005	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent- containing sludges and soils.	8 Nov 1988
F005	All others	8 Nov 1986
F006	Wastewater	8 Aug 1990
F006	Nonwastewater	8 Aug 1988
F006 (cyanides)	Nonwastewater	8 July 1989
F007	All	8 July 1989
F008	All	8 July 1989
F009	All	8 July 1989
F010	All	8 June 1989
F011 (cyanides)	Nonwastewater	8 Dec 1989
F011	All others	8 July 1989
F012 (cyanides)	Nonwastewater	8 Dec 1989
F012	All others	8 July 1989
F019	All	8 Aug 1990
F020	All	8 Nov 1988
F021	All	8 Nov 1988
F025	All	8 Aug 1990

Waste Code	Waste Category	Effective Date
F026	All	8 Nov 1988
F027	All	8 Nov 1988
F028	All	8 Nov 1988
F032	Mixed with radioactive wastes	12 May 1999
F032	All others	12 May 1997
F033	Mixed with radioactive wastes	12 May 1999
F033	All others	12 May 1997
F034	Mixed with radioactive wastes	12 May 1999
F034	All others	12 May 1997
F037	Not generated from surface impoundment cleanouts or closures	30 June 1993
F037	Generated from surface impoundment cleanouts or closures	30 June 1994
F037	Mixed with radioactive wastes	30 June 1994
F038	Not generated from surface impoundment cleanouts or closures	30 June 1993
F038	Generated from surface impoundment cleanouts or closures	30 June 1994
F038	Mixed with radioactive wastes	30 June 1994
F039	Wastewater	8 Aug 1990
F039	Nonwastewater	8 May 1992
K001 (organics)[b]	All	8 Aug 1988
K001	All others	8 Aug 1988
K002	All	8 Aug 1990
K003	All	8 Aug 1990
K004	Wastewater	8 Aug 1990
K004	Nonwastewater	8 Aug 1988
K005	Wastewater	8 Aug 1990
K005	Nonwastewater	8 June 1989
K006	All	8 Aug 1990
K007	Wastewater	8 Aug 1990
K007	Nonwastewater	8 June 1989
K008	Wastewater	8 Aug 1990
K008	Nonwastewater	8 Aug 1988
K009	All	8 June 1989
K010	All	8 June 1989
K011	Wastewater	8 Aug 1990
K011	Nonwastewater	8 June 1989
K013	Wastewater	8 Aug 1990
K013	Nonwastewater	8 June 1989

Waste Code	Waste Category	Effective Date
K014	Wastewater	8 Aug 1990
K014	Nonwastewater	8 June 1989
K015	Wastewater	8 Aug 1988
K015	Nonwastewater	8 Aug 1990
K016	All	8 Aug 1988
K017	All	8 Aug 1990
K018	All	8 Aug 1988
K019	All	8 Aug 1988
K020	All	8 Aug 1988
K021	Wastewater	8 Aug 1990
K021	Nonwastewater	8 Aug 1988
K022	Wastewater	8 Aug 1990
K022	Nonwastewater	8 Aug 1988
K023	All	8 June 1989
K024	All	8 Aug 1988
K025	Wastewater	8 Aug 1990
K025	Nonwastewater	8 Aug 1988
K026	All	8 Aug 1990
K027	All	8 June 1989
K028 (metals)	Nonwastewater	8 Aug 1990
K028	All others	8 June 1989
K029	Wastewater	8 Aug 1990
K029	Nonwastewater	8 June 1989
K030	All	8 Aug 1988
K031	Wastewater	8 Aug 1990
K031	Nonwastewater	8 May 1992
K032	All	8 Aug 1990
K033	All	8 Aug 1990
K034	All	8 Aug 1990
K035	All	8 Aug 1990
K036	Wastewater	8 June 1989
K036	Nonwastewater	8 Aug 1988
K037[b]	Wastewater	8 Aug 1988
K037	Nonwastewater	8 Aug 1988
K038	All	8 June 1989
K039	All	8 June 1989
K040	All	8 June 1989
K041	All	8 Aug 1990
K042	All	8 Aug 1990
K043	All	8 June 1989
K044	All	8 Aug 1988
K045	All	8 Aug 1988
K046 (nonreactive)	Nonwastewater	8 Aug 1988
K046	All others	8 Aug 1990
K047	All	8 Aug 1988
K048	Wastewater	8 Aug 1990
K048	Nonwastewater	8 Nov 1990
K049	Wastewater	8 Aug 1990
K049	Nonwastewater	8 Nov 1990
K050	Wastewater	8 Aug 1990

Waste Code	Waste Category	Effective Date
K050	Nonwastewater	8 Nov 1990
K051	Wastewater	8 Aug 1990
K051	Nonwastewater	8 Nov 1990
K052	Wastewater	8 Aug 1990
K052	Nonwastewater	8 Nov 1990
K060	Wastewater	8 Aug 1990
K060	Nonwastewater	8 Aug 1988
K061	Wastewater	8 Aug 1990
K061	Nonwastewater	30 Jun 1992
K062	All	8 Aug 1988
K069 (noncalcium sulfate)	Nonwastewater	8 Aug 1988
K069	All others	8 Aug 1990
K071	All	8 Aug 1990
K073	All	8 Aug 1990
K083	All	8 Aug 1990
K084	Wastewater	8 Aug 1990
K084	Nonwastewater	8 May 1992
K085	All	8 Aug 1990
K086 (organics)[b]	All	8 Aug 1988
K086	All others	8 Aug 1988
K087	All	8 Aug 1988
K088	All others	8 Jan 1997
K093	All	8 June 1989
K094	All	8 June 1989
K095	Wastewater	8 Aug 1990
K095	Nonwastewater	8 June 1989
K096	Wastewater	8 Aug 1990
K096	Nonwastewater	8 June 1989
K097	All	8 Aug 1990
K098	All	8 Aug 1990
K099	All	8 Aug 1988
K100	Wastewater	8 Aug 1990
K100	Nonwastewater	8 Aug 1988
K101 (organics)	Wastewater	8 Aug 1988
K101 (metals)	Wastewater	8 Aug 1990
K101 (organics)	Nonwastewater	8 Aug 1988
K101 (metals)	Nonwastewater	8 May 1992
K102 (organics)	Wastewater	8 Aug 1988
K102 (metals)	Wastewater	8 Aug 1990
K102 (organics)	Nonwastewater	8 Aug 1988
K102 (metals)	Nonwastewater	8 May 1992
K103	All	8 Aug 1988
K104	All	8 Aug 1988
K105	All	8 Aug 1990
K106	Wastewater	8 Aug 1990
K106	Nonwastewater	8 May 1992
K107	Mixed with radioactive wastes	30 June 1994
K107	All others	9 Nov 1992
K108	Mixed with radioactive wastes	30 June

Waste Code	Waste Category	Effective Date
		1994
K108	All others	9 Nov 1992
K109	Mixed with radioactive wastes	30 June 1994
K109	All others	9 Nov 1992
K110	Mixed with radioactive wastes	30 June 1994
K110	All others	9 Nov 1992
K111	Mixed with radioactive wastes	30 June 1994
K111	All others	9 Nov 1992
K112	Mixed with radioactive wastes	30 June 1994
K112	All others	9 Nov 1992
K113	All	8 June 1989
K114	All	8 June 1989
K115	All	8 June 1989
K116	All	8 June 1989
K117	Mixed with radioactive wastes	30 June 1994
K117	All others	9 Nov 1992
K118	Mixed with radioactive wastes	30 June 1994
K118	All others	9 Nov 1992
K123	Mixed with radioactive wastes	30 June 1994
K123	All others	9 Nov 1992
K124	Mixed with radioactive wastes	30 June 1994
K124	All others	9 Nov 1992
K125	Mixed with radioactive wastes	30 June 1994
K125	All others	9 Nov 1992
K126	Mixed with radioactive wastes	30 June 1994
K126	All others	9 Nov 1992
K131	Mixed with radioactive wastes	30 June 1994
K131	All others	9 Nov 1992
K132	Mixed with radioactive wastes	30 June 1994
K132	All others	9 Nov 1992
K136	Mixed with radioactive wastes	30 June 1994
K136	All others	9 Nov 1992
K141	Mixed with radioactive wastes	19 Sep 1996
K141	All others	19 Dec 1994
K142	Mixed with radioactive wastes	19 Sep

Waste Code	Waste Category	Effective Date
K142	All others	19 Dec 1996
K143	Mixed with radioactive wastes	19 Sep 1994
K143	All others	19 Dec 1996
K144	Mixed with radioactive wastes	19 Sep 1994
K144	All others	19 Dec 1996
K145	Mixed with radioactive wastes	19 Sep 1994
K145	All others	19 Dec 1996
K147	Mixed with radioactive wastes	19 Sep 1994
K147	All others	19 Dec 1996
K148	Mixed with radioactive wastes	19 Sep 1994
K148	All others	19 Dec 1996
K149	Mixed with radioactive wastes	19 Sep 1994
K149	All others	19 Dec 1996
K150	Mixed with radioactive wastes	19 Sep 1994
K150	All others	19 Dec 1996
K151	Mixed with radioactive wastes	19 Sep 1994
K151	All others	19 Dec 1996
K156	Mixed with radioactive wastes	8 Apr 1998
K156	All others	8 Jul 1996
K157	Mixed with radioactive wastes	8 Apr 1998
K157	All others	8 Jul 1996
K158	Mixed with radioactive wastes	8 Apr 1998
K158	All others	8 Jul 1996
K159	Mixed with radioactive wastes	8 Apr 1998
K159	All others	8 Jul 1996
K160	Mixed with radioactive wastes	8 Apr 1998
K160	All others	8 Jul 1996
K161	Mixed with radioactive wastes	8 Apr 1998
K161	All others	8 Jul 1996
P001	All	8 Aug 1990
P002	All	8 Aug 1990
P003	All	8 Aug 1990

Waste Code	Waste Category	Effective Date
P004	All	8 Aug 1990
P005	All	8 Aug 1990
P006	All	8 Aug 1990
P007	All	8 Aug 1990
P008	All	8 Aug 1990
P009	All	8 Aug 1990
P010	Wastewater	8 Aug 1990
P010	Nonwastewater	8 May 1992
P011	Wastewater	8 Aug 1990
P011	Nonwastewater	8 May 1992
P012	Wastewater	8 Aug 1990
P012	Nonwastewater	8 May 1992
P013 (barium)	Nonwastewater	8 Aug 1990
P013	All others	8 June 1989
P014	All	8 Aug 1990
P015	All	8 Aug 1990
P016	All	8 Aug 1990
P017	All	8 Aug 1990
P018	All	8 Aug 1990
P020	All	8 Aug 1990
P021	All	8 June 1989
P022	All	8 Aug 1990
P023	All	8 Aug 1990
P024	All	8 Aug 1990
P026	All	8 Aug 1990
P027	All	8 Aug 1990
P028	All	8 Aug 1990
P029	All	8 June 1989
P030	All	8 June 1989
P031	All	8 Aug 1990
P033	All	8 Aug 1990
P034	All	8 Aug 1990
P036	Wastewater	8 Aug 1990
P036	Nonwastewater	8 May 1992
P037	All	8 Aug 1990
P038	Wastewater	8 Aug 1990
P038	Nonwastewater	8 May 1992
P039	All	8 June 1989
P040	All	8 June 1989
P041	All	8 June 1989
P042	All	8 Aug 1990
P043	All	8 June 1989
P044	All	8 June 1989
P045	All	8 Aug 1990
P046	All	8 Aug 1990
P047	All	8 Aug 1990
P048	All	8 Aug 1990
P049	All	8 Aug 1990
P050	All	8 Aug 1990
P051	All	8 Aug 1990

Waste Code	Waste Category	Effective Date
P054	All	8 Aug 1990
P056	All	8 Aug 1990
P057	All	8 Aug 1990
P058	All	8 Aug 1990
P059	All	8 Aug 1990
P060	All	8 Aug 1990
P062	All	8 June 1989
P063	All	8 June 1989
P064	All	8 Aug 1990
P065	Wastewater	8 Aug 1990
P065	Nonwastewater	8 May 1992
P066	All	8 Aug 1990
P067	All	8 Aug 1990
P068	All	8 Aug 1990
P069	All	8 Aug 1990
P070	All	8 Aug 1990
P071	All	8 June 1989
P072	All	8 Aug 1990
P073	All	8 Aug 1990
P074	All	8 June 1989
P075	All	8 Aug 1990
P076	All	8 Aug 1990
P077	All	8 Aug 1990
P078	All	8 Aug 1990
P081	All	8 Aug 1990
P082	All	8 Aug 1990
P084	All	8 Aug 1990
P085	All	8 June 1989
P087	All	8 May 1992
P088	All	8 Aug 1990
P089	All	8 June 1989
P092	Wastewater	8 Aug 1990
P092	Nonwastewater	8 May 1992
P093	All	8 Aug 1990
P094	All	8 June 1989
P095	All	8 Aug 1990
P096	All	8 Aug 1990
P097	All	8 June 1989
P098	All	8 June 1989
P099 (silver)	Wastewater	8 Aug 1990
P099	All others	8 June 1989
P101	All	8 Aug 1990
P102	All	8 Aug 1990
P103	All	8 Aug 1990
P104 (silver)	Wastewater	8 Aug 1990
P104	All others	8 June 1989
P105	All	8 Aug 1990
P106	All	8 June 1989
P108	All	8 Aug 1990
P109	All	8 June 1989

Waste Code	Waste Category	Effective Date
P110	All	8 Aug 1990
P111	All	8 June 1989
P112	All	8 Aug 1990
P113	All	8 Aug 1990
P114	All	8 Aug 1990
P115	All	8 Aug 1990
P116	All	8 Aug 1990
P118	All	8 Aug 1990
P119	All	8 Aug 1990
P120	All	8 Aug 1990
P121	All	8 June 1989
P122	All	8 Aug 1990
P123	All	8 Aug 1990
P127	Mixed with radioactive wastes	8 Apr 1998
P127	All others	8 Jul 1996
P128	Mixed with radioactive wastes	8 Apr 1998
P128	All others	8 Jul 1996
P185	Mixed with radioactive wastes	8 Apr 1998
P185	All others	8 Jul 1996
P188	Mixed with radioactive wastes	8 Apr 1998
P188	All others	8 Jul 1996
P189	Mixed with radioactive wastes	8 Apr 1998
P189	All others	8 Jul 1996
P190	Mixed with radioactive wastes	8 Apr 1998
P190	All others	8 Jul 1996
P191	Mixed with radioactive wastes	8 Apr 1998
P191	All others	8 Jul 1996
P192	Mixed with radioactive wastes	8 Apr 1998
P192	All others	8 Jul 1996
P194	Mixed with radioactive wastes	8 Apr 1998
P194	All others	8 Jul 1996
P196	Mixed with radioactive wastes	8 Apr 1998
P196	All others	8 Jul 1996
P197	Mixed with radioactive wastes	8 Apr 1998
P197	All others	8 Jul 1996
P198	Mixed with radioactive wastes	8 Apr 1998
P198	All others	8 Jul 1996
P199	Mixed with radioactive wastes	8 Apr 1998
P201	All others	8 Jul 1996
P201	Mixed with radioactive wastes	8 Apr 1998
P202	Mixed with radioactive wastes	8 Apr 1998
P202	All others	8 Jul 1996
P203	Mixed with radioactive wastes	8 Apr 1998
P203	All others	8 Jul 1996
P204	Mixed with radioactive wastes	8 Apr 1998
P204	All others	8 Jul 1996
P205	Mixed with radioactive wastes	8 Apr 1998
P205	All others	8 Jul 1996
U001	All	8 Aug 1990
U002	All	8 Aug 1990

Waste Code	Waste Category	Effective Date
U003	All	8 Aug 1990
U004	All	8 Aug 1990
U005	All	8 Aug 1990
U006	All	8 Aug 1990
U007	All	8 Aug 1990
U008	All	8 Aug 1990
U009	All	8 Aug 1990
U010	All	8 Aug 1990
U011	All	8 Aug 1990
U012	All	8 Aug 1990
U014	All	8 Aug 1990
U015	All	8 Aug 1990
U016	All	8 Aug 1990
U017	All	8 Aug 1990
U018	All	8 Aug 1990
U019	All	8 Aug 1990
U020	All	8 Aug 1990
U021	All	8 Aug 1990
U022	All	8 Aug 1990
U023	All	8 Aug 1990
U024	All	8 Aug 1990
U025	All	8 Aug 1990
U026	All	8 Aug 1990
U027	All	8 Aug 1990
U028	All	8 June 1989
U029	All	8 Aug 1990
U030	All	8 Aug 1990
U031	All	8 Aug 1990
U032	All	8 Aug 1990
U033	All	8 Aug 1990
U034	All	8 Aug 1990
U035	All	8 Aug 1990
U036	All	8 Aug 1990
U037	All	8 Aug 1990
U038	All	8 Aug 1990
U039	All	8 Aug 1990
U041	All	8 Aug 1990
U042	All	8 Aug 1990
U043	All	8 Aug 1990
U044	All	8 Aug 1990
U045	All	8 Aug 1990
U046	All	8 Aug 1990
U047	All	8 Aug 1990
U048	All	8 Aug 1990
U049	All	8 Aug 1990
U050	All	8 Aug 1990
U051	All	8 Aug 1990
U052	All	8 Aug 1990
U053	All	8 Aug 1990
U055	All	8 Aug 1990

Waste Code	Waste Category	Effective Date
U056	All	8 Aug 1990
U057	All	8 Aug 1990
U058	All	8 June 1989
U059	All	8 Aug 1990
U060	All	8 Aug 1990
U061	All	8 Aug 1990
U062	All	8 Aug 1990
U063	All	8 Aug 1990
U064	All	8 Aug 1990
U066	All	8 Aug 1990
U067	All	8 Aug 1990
U068	All	8 Aug 1990
U069	All	30 June 1992
U070	All	8 Aug 1990
U071	All	8 Aug 1990
U072	All	8 Aug 1990
U073	All	8 Aug 1990
U074	All	8 Aug 1990
U075	All	8 Aug 1990
U076	All	8 Aug 1990
U077	All	8 Aug 1990
U078	All	8 Aug 1990
U079	All	8 Aug 1990
U080	All	8 Aug 1990
U081	All	8 Aug 1990
U082	All	8 Aug 1990
U083	All	8 Aug 1990
U084	All	8 Aug 1990
U085	All	8 Aug 1990
U086	All	8 Aug 1990
U087	All	8 June 1989
U088	All	8 June 1989
U089	All	8 Aug 1990
U090	All	8 Aug 1990
U091	All	8 Aug 1990
U092	All	8 Aug 1990
U093	All	8 Aug 1990
U094	All	8 Aug 1990
U095	All	8 Aug 1990
U096	All	8 Aug 1990
U097	All	8 Aug 1990
U098	All	8 Aug 1990
U099	All	8 Aug 1990
U101	All	8 Aug 1990
U102	All	8 June 1989
U103	All	8 Aug 1990
U105	All	8 Aug 1990
U106	All	8 Aug 1990
U107	All	8 June 1989

Waste Code	Waste Category	Effective Date
U108	All	8 Aug 1990
U109	All	8 Aug 1990
U110	All	8 Aug 1990
U111	All	8 Aug 1990
U112	All	8 Aug 1990
U113	All	8 Aug 1990
U114	All	8 Aug 1990
U115	All	8 Aug 1990
U116	All	8 Aug 1990
U117	All	8 Aug 1990
U118	All	8 Aug 1990
U119	All	8 Aug 1990
U120	All	8 Aug 1990
U121	All	8 Aug 1990
U122	All	8 Aug 1990
U123	All	8 Aug 1990
U124	All	8 Aug 1990
U125	All	8 Aug 1990
U126	All	8 Aug 1990
U127	All	8 Aug 1990
U128	All	8 Aug 1990
U129	All	8 Aug 1990
U130	All	8 Aug 1990
U131	All	8 Aug 1990
U132	All	8 Aug 1990
U133	All	8 Aug 1990
U134	All	8 Aug 1990
U135	All	8 Aug 1990
U136	Wastewater	8 Aug 1990
U136	Nonwastewater	8 May 1992
U137	All	8 Aug 1990
U138	All	8 Aug 1990
U140	All	8 Aug 1990
U141	All	8 Aug 1990
U142	All	8 Aug 1990
U143	All	8 Aug 1990
U144	All	8 Aug 1990
U145	All	8 Aug 1990
U146	All	8 Aug 1990
U147	All	8 Aug 1990
U148	All	8 Aug 1990
U149	All	8 Aug 1990
U150	All	8 Aug 1990
U151	Wastewater	8 Aug 1990
U151	Nonwastewater	8 May 1992
U152	All	8 Aug 1990
U153	All	8 Aug 1990
U154	All	8 Aug 1990
U155	All	8 Aug 1990
U156	All	8 Aug 1990

Waste Code	Waste Category	Effective Date
U157	All	8 Aug 1990
U158	All	8 Aug 1990
U159	All	8 Aug 1990
U160	All	8 Aug 1990
U161	All	8 Aug 1990
U162	All	8 Aug 1990
U163	All	8 Aug 1990
U164	All	8 Aug 1990
U165	All	8 Aug 1990
U166	All	8 Aug 1990
U167	All	8 Aug 1990
U168	All	8 Aug 1990
U169	All	8 Aug 1990
U170	All	8 Aug 1990
U171	All	8 Aug 1990
U172	All	8 Aug 1990
U173	All	8 Aug 1990
U174	All	8 Aug 1990
U176	All	8 Aug 1990
U177	All	8 Aug 1990
U178	All	8 Aug 1990
U179	All	8 Aug 1990
U180	All	8 Aug 1990
U181	All	8 Aug 1990
U182	All	8 Aug 1990
U183	All	8 Aug 1990
U184	All	8 Aug 1990
U185	All	8 Aug 1990
U186	All	8 Aug 1990
U187	All	8 Aug 1990
U188	All	8 Aug 1990
U189	All	8 Aug 1990
U190	All	8 June 1989
U191	All	8 Aug 1990
U192	All	8 Aug 1990
U193	All	8 Aug 1990
U194	All	8 Aug 1990
U196	All	8 Aug 1990
U197	All	8 Aug 1990
U200	All	8 Aug 1990
U201	All	8 Aug 1990
U202	All	8 Aug 1990
U203	All	8 Aug 1990
U204	All	8 Aug 1990
U205	All	8 Aug 1990
U206	All	8 Aug 1990
U207	All	8 Aug 1990
U208	All	8 Aug 1990
U209	All	8 Aug 1990
U210	All	8 Aug 1990

Waste Code	Waste Category	Effective Date
U211	All	8 Aug 1990
U213	All	8 Aug 1990
U214	All	8 Aug 1990
U215	All	8 Aug 1990
U216	All	8 Aug 1990
U217	All	8 Aug 1990
U218	All	8 Aug 1990
U219	All	8 Aug 1990
U220	All	8 Aug 1990
U221	All	8 June 1989
U222	All	8 Aug 1990
U223	All	8 June 1989
U225	All	8 Aug 1990
U226	All	8 Aug 1990
U227	All	8 Aug 1990
U228	All	8 Aug 1990
U234	All	8 Aug 1990
U235	All	8 June 1989
U236	All	8 Aug 1990
U237	All	8 Aug 1990
U238	All	8 Aug 1990
U239	All	8 Aug 1990
U240	All	8 Aug 1990
U243	All	8 Aug 1990
U244	All	8 Aug 1990
U246	All	8 Aug 1990
U247	All	8 Aug 1990
U248	All	8 Aug 1990
U249	All	8 Aug 1990
U271	Mixed with radioactive wastes	8 Apr 1998
U271	All others	8 July 1996
U277	Mixed with radioactive wastes	8 Apr 1998
U277	All others	8 July 1996
U278	Mixed with radioactive wastes	8 Apr 1998
U278	All others	8 July 1996
U279	Mixed with radioactive wastes	8 Apr 1998
U279	All others	8 July 1996
U280	Mixed with radioactive wastes	8 Apr 1998
U280	All others	8 July 1996
U328	Mixed with radioactive wastes	30 June 1994
U328	All others	9 Nov 1992
U353	Mixed with radioactive wastes	30 June 1994
U353	All others	9 Nov 1992
U359	Mixed with radioactive wastes	30 June 1994
U359	All others	9 Nov 1992
U364	Mixed with radioactive wastes	8 Apr 1998
U364	All others	8 July 1996

Waste Code	Waste Category	Effective Date
U365	Mixed with radioactive wastes	8 Apr 1998
U365	All others	8 July 1996
U366	Mixed with radioactive wastes	8 Apr 1998
U366	All others	8 July 1996
U367	Mixed with radioactive wastes	8 Apr 1998
U367	All others	8 July 1996
U372	Mixed with radioactive wastes	8 Apr 1998
U372	All others	8 July 1996
U373	Mixed with radioactive wastes	8 Apr 1998
U373	All others	8 July 1996
U375	Mixed with radioactive wastes	8 Apr 1998
U375	All others	8 July 1996
U376	Mixed with radioactive wastes	8 Apr 1998
U376	All others	8 July 1996
U377	Mixed with radioactive wastes	8 Apr 1998
U377	All others	8 July 1996
U378	Mixed with radioactive wastes	8 Apr 1998
U378	All others	8 July 1996
U379	Mixed with radioactive wastes	8 Apr 1998
U379	All others	8 July 1996
U381	Mixed with radioactive wastes	8 Apr 1998
U381	All others	8 July 1996
U382	Mixed with radioactive wastes	8 Apr 1998
U382	All others	8 July 1996
U383	Mixed with radioactive wastes	8 Apr 1998
U383	All others	8 July 1996
U384	Mixed with radioactive wastes	8 Apr 1998
U384	All others	8 July 1996
U385	Mixed with radioactive wastes	8 Apr 1998
U385	All others	8 July 1996
U386	Mixed with radioactive wastes	8 Apr 1998
U386	All others	8 July 1996
U387	Mixed with radioactive wastes	8 Apr 1998
U387	All others	8 July 1996
U389	Mixed with radioactive wastes	8 Apr 1998
U389	All others	8 July 1996
U390	Mixed with radioactive wastes	8 Apr 1998
U390	All others	8 July 1996
U391	Mixed with radioactive wastes	8 Apr 1998
U391	All others	8 July 1996
U392	Mixed with radioactive wastes	8 Apr 1998
U392	All others	8 July 1996
U393	Mixed with radioactive wastes	8 Apr 1998
U393	All others	8 July 1996
U394	Mixed with radioactive wastes	8 Apr 1998
U394	All others	8 July 1996
U395	Mixed with radioactive wastes	8 Apr 1998
U395	All others	8 July 1996
U396	Mixed with radioactive wastes	8 Apr 1998
U396	All others	8 July 1996

Waste Code	Waste Category	Effective Date
U400	Mixed with radioactive wastes	8 Apr 1998
U400	All others	8 July 1996
U401	Mixed with radioactive wastes	8 Apr 1998
U401	All others	8 July 1996
U402	Mixed with radioactive wastes	8 Apr 1998
U402	All others	8 July 1996
U403	Mixed with radioactive wastes	8 Apr 1998
U403	All others	8 July 1996
U404	Mixed with radioactive wastes	8 Apr 1998
U404	All others	8 July 1996
U407	Mixed with radioactive wastes	8 Apr 1998
U407	All others	8 July 1996
U409	Mixed with radioactive wastes	8 Apr 1998
U409	All others	8 July 1996
U410	Mixed with radioactive wastes	8 Apr 1998
U410	All others	8 July 1996
U411	Mixed with radioactive wastes	8 Apr 1998
U411	All others	8 July 1996

a This table does not include mixed radioactive wastes (from the First, Second, and Third Third rules) which received national capacity variance until May 8, 1992. This table also does not include contaminated soil and debris wastes.
b The standard has been revised in the Third Third Final Rule, 1 June 1990.
c This standard was revised in the Third Third Emergency Rule, 24 May 1993.
d This standard was revised in the Phase II Final Rule, 19 September 1994.
e The standards for selected reactive wastes was revised in the Phase III Final Rule, 6 April 1996.

Part 2--Summary of Effective Dates of Land Disposal Restrictions for Contaminated Soil and Debris (CSD)

Restricted hazardous waste in CSD		Effective date
1.	Solvent-(F001-F005) and dioxin-(F020-F023 and F026-F028) containing soil and debris from CERCLA response of RCRA corrective actions.	8 Nov 1990
2.	Soil and debris not from CERCLA response or RCRA corrective actions contaminated with less than 1% total solvents (F001-F005) or dioxins (F020- F023 and F026-F028).	8 Nov 1988
3.	All soil and debris contaminated with First Third wastes for which treatment standards are based on incineration.	8 Aug 1990
4.	All soil and debris contaminated with Second Third wastes for which treatment standards are based on incineration.	8 June 1991
5.	All soil and debris contaminated with Third Third wastes or, First or Second Third "soft hammer" wastes which had treatment standards promulgated in the Third Third rule, for which treatment standards are based on incineration, vitrification, or mercury retorting, acid leaching followed by chemical precipitation, or thermal recovery of metals; as well as all inorganic solids debris contaminated with D004-D011 wastes, and all soil and debris contaminated with mixed RCRA/radioactive wastes.	8 May 1992
6.	Soil and debris contaminated with D012-D043, K141-K145ms K147-151 wastes.	19 Dec 1994
7.	Debris (only) contaminated with F037, F038, K107-K112, K117, K118, K123-126, K131, K132, K136, U326, U353, U359.	19 Dec 1994
8.	Soil and debris contaminated with K156-K161, P127, P128, P188-P192, P194, P196-P199, P201, P205, U271, U277-U280, U364-U367, U372, U373, U375-U379, U381, U387, U389-U396, U400-U404, U407, and U409-U411 wastes.	8 July 1996
9.	Soil and debris contaminated with K088 wastes	8 Jan 1997
10.	Soil and debris contaminated with radioactive wastes mixed with K088, K156-K161, P127, P128, P188-P182, P184, P196-P199, P201-P206, U271, U277-U280, U362-U367, U372, U373, U375-U379, U381-U387, U389- U396, U400-U404, U407, and U409-U411 wastes.	8 Apr 1998
11.	Soil and debris contaminated with F032, F034, and F035 NOTE: 1. Appendix VII is provided for the convenience of the reader. 2. Contaminated Soil and Debris Rule will be promulgated in the future.	12 May1997

Appendix 4-8

Schedule for Implementation of Air Emissions Standards (40 CFR 265.1082)

Facilities existing on 6 October 1996, which are required to comply with 40 CFR 265, Subparts I, J, and K, shall:

- install and begin operation of all required control equipment by 6 October 1996. If it cannot be installed and operating by 6 October 1996 the owner and operator shall:
  - install and being operation as soon as possible but not later then 8 December 1997
  - prepare an implementation schedule which is placed in the operating record by 6 October 1996.

Facilities which are required to comply with 40 CFR 265, Subparts I, J, and K due to a statutory or regulatory amendment shall:.

- install and begin operation of all required control equipment by the date of the amendment. If it cannot be installed and operating by the date of the amendment the owner and operator shall:
  - install and being operation as soon as possible but not later than 30 mo after the amendment date
  - prepare an implementation schedule which is placed in the operating record no later than the date of the amendment.

(NOTE: The Regional Administrator may elect to extend the implementation date at a facility on a case-by-case basis.)

SECTION 5

PESTICIDE MANAGEMENT

U.S. ECAH, September 1999

A. Applicability

This section applies to FWS facilities which use, store, or handle pesticides. Pesticides are regulated on the Federal level (U.S. Environmental Protection Agency (USEPA)) and the state level. As used in this handbook the terms pesticides encompasses pesticides, herbicides, and fungicides.

It must be noted that pesticides are by nature hazardous materials and are subject to hazardous material regulations.

B. Federal Legislation

- *The Federal Insecticide, Fungicide, and Rodenticide Act* (FIFRA). This act, as last amended in December 1991, 7 U.S. Code (USC) 136-136y, deals with the sale, distribution, and use of pesticides. It requires the registration of new pesticides and, when pesticides are reregistered, requires that they will not present any unreasonable risks to human health or the environment, if used according to label directions.

- *The Endangered Species Act* (ESA) of 1973. The purpose of this act, 16 USC 1531-1547, et al, last amended in October 1988, is to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions for protection of endangered species (16 USC 1531(b)). Under ESA, the policy of Congress is that all Federal departments and agencies must seek to conserve endangered species and threatened species and must use their authorities in furtherance of the purposes of this act. Further, Federal agencies must cooperate with state and local agencies to resolve water resource issues in concert with conservation of endangered species (16 USC 1531(c)).

- Executive Order (EO) 12088. This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities it funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

- Federal regulations used to develop the checklist include:

    - EO 12088, *Federal Compliance with Pollution Control Standards.*
    - 29 CFR 1910, *Occupational Safety and Health Standards.*
    - 40 CFR 152, *Pesticide Registration and Classification Procedures.*
    - 40 CFR 166, *Exemption of Federal and State Agencies for Use of Pesticides Under Emergency Conditions.*
    - 40 CFR 171, *Certification of Pesticide Applicators.*
    - 50 CFR 402, *Interagency cooperation - Endangered Species Act of 1973, as amended.*

C. State/Local Regulations

State pesticide regulatory programs are to be at least as stringent as FIFRA. State and local programs typically contain regulations which are tailored to an industry or activity which is prevalent or particularly sensitive in a state. State and local pesticide regulations in many cases provide more stringent standards or specifically identify a requirement which may be qualitatively regulated under the Federal program. State and local pesticide programs generally include regulations which address the following topics:

1. restrictions or requirements for the sale, distribution, or use of selected pesticides
2. disposal requirements for excess pesticides and pesticide wastes such as pesticide containers
3. restrictions on the control of specific animal or insect species
4. specifications for bulk pesticide storage tanks and storage facilities
5. operational requirements for selected application methods
6. recordkeeping and applicator certification requirements.

D. FWS/DOI Manuals

No applicable manuals are final as of the publication of this handbook.

E. Key Compliance Requirements

- Pesticide Application - People applying restricted-use pesticides must be certified to apply restricted-use pesticides. Contractors used for pest management must have current state certification for the types of applications to be performed. The application of pesticides must not jeopardize the existence of threatened or endangered species (40 CFR 171.9 and 50 CFR 402).

- Pesticide Storage, Mixing, and Preparation Facilities - Pesticide storage, mixing, and preparation activities must provide facilities and procedures to ensure safety of personnel. Facilities such as a ventilation system for all indoor pesticide mixing/preparation areas and an emergency deluge shower and eyewash station located to provide immediate access to all personnel performing mixing. Personal protective clothing and equipment needs to be provided and used by pest management personnel. (29 CFR 1910.133).

- Highly Toxic Pesticide Storage and Use - Storage facilities for pesticides and excess pesticides classed as highly toxic or moderately toxic, that are labeled DANGER, POISON, or with the skull and crossbones symbol, should meet specific structural, operational, and storage requirements. These include pesticides being kept in a dry, separate room with fire protection and not near food or feed, and in containers in good condition with plainly visible labels. There should be a decontamination facility and the local fire department, hospitals, public health officials, and police departments should be notified in writing that the pesticides are being stored (MP).

- Recordkeeping - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

- Pesticide Labeling - Every pesticide product is required to have label that clearly identifies contents, source, ingredients, and directions for use (40 CFR 156.10(a)) **[Added January 1999]**.

F. Key Compliance Definitions

- *Acute LD_{50}* - a statistically derived estimate of the concentration of a substance that would cause 50 percent mortality to the test population under specified conditions (40 CFR 152.3).

- *Caution* - the human hazard signal word required on the front panel of a pesticide container determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category III or IV must bear on the front panel the signal word CAUTION (see Toxicity Category) (40 CFR 156.10(h)).

- *Certified Applicator* - any individual who is certified by the USEPA or the state to use or supervise the use of any restricted use pesticide covered by that individual's certification (7 CFR 110.2).

- *Commercial Applicator* - a certified applicator, other than a private applicator, who uses or supervises the use of any pesticide, for any purpose, on any property, or performs other pest control related activities (40 CFR 171.2).

- *Crisis Exemption* - this is utilized in an emergency condition when the time from discovery of the emergency to the time when the pesticide use needed is insufficient to allow for the authorization of a specific quarantine exemption or public health exemption (40 CFR 166.2).

- *Danger* - the human hazard signal word required on the front panel of a pesticide container determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category I must bear on the front panel, the signal word DANGER (see Toxicity Category) (40 CFR 156.10(h)).

- *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.

- *Pesticide Product* - a pesticide in the particular form (including composition, packaging, and labeling) in which the pesticide is, or is intended to be, distributed or sold. This includes any physical apparatus used to deliver or apply the pesticide if distributed or sold with the pesticide (40 CFR 152.3).

- *Private Applicator* - a certified applicator who uses or supervises the use of any restricted use pesticide for purposes of producing any agricultural commodity (7 CFR 100.2).

- *Public Health Exemption* - this may be authorized in an emergency condition to control a pest that will cause a significant risk to human health (40 CFR 166.2).

- *Quarantine Exemption* - this may be authorized in an emergency condition to control the introduction or spread of any pest new to or not theretofore known to be widely prevalent or distributed within and throughout the United States and its territories (40 CFR 166.2).

- *Restricted-Use Pesticides* - pesticides designated for restricted use under the provisions of Section 3(d)(1)(c) of FIFRA (40 CFR 171.2).

- *Specific Exemption* - this exemption may be authorized in an emergency condition to avert (40 CFR 166.2):
    1. a significant economic loss
    2. a significant risk to endangered species, threatened species, beneficial organisms, or the environment.

- *Toxicity Category* - required warnings and precautionary statements are based on the Toxicity Category of the pesticide. The category is assigned on the basis of the highest hazard shown in the table listed in 40 CFR 156.10 (40 CFR 156.10(h)).

- *Warning* - the human hazard signal word required on the front panel of a pesticide container determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category II shall bear on the front panel the signal word WARNING (see 40 CFR 156.10 for listing of indicators necessary to meet specific criteria of toxicity categories) (40 CFR 156.10(h)).

PESTICIDE MANAGEMENT

GUIDANCE FOR CHECKLIST USERS

	REFER TO CHECKLIST ITEMS:
All Facilities	PM.1.1 through PM.1.8
Pesticide Applicators	PM.5.1 through PM.5.3
Pesticide Applications	
General	PM.10.1 and PM.10.2
Agriculture	PM.20.1 and PM.20.2
Dining Facilities	PM.35.1
Documentation	PM.45.1 and PM.45.2
Storage/Mixing/Preparation Areas	
General	PM.47.1 through PM.47.9
Highly and Moderately Toxic Pesticides	PM.48.1 through PM.48.8
Disposal	PM.55.1 through PM.55.6

PESTICIDE MANAGEMENT

Records To Review

- MSDSs for pesticides
- Pesticide application records
- Certification status of pesticide applicators
- Pesticide disposal manifests
- Contract files
- Any emergency exemption granted to the FWS by the USEPA

Physical Features To Inspect

- Personnel protection equipment
- Pesticide application equipment
- Pesticide storage areas, including storage containers

COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
PM.1 **ALL FACILITIES**	
PM.1.1. The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/ identifying information as the citation).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, interagency agreements, or equivalent state enforcement actions.
PM.1.2. FWS facilities are required to comply with state and local pesticide regulations (EO 12088, Section 1-1).	Verify that the facility is complying with state and local requirements. Verify that the facility is operating according to permits issued by the state or local agencies. (NOTE: Issues typically regulated by state and local agencies include: – applicator certification – restricted-use pesticides – application procedures – banned pesticides – disposal methods – emergency application of pesticides due to public health threats.)
PM.1.3. Facilities will meet regulatory requirements issued since the finalization of this handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).	Determine if any new regulations concerning pesticides have been issued since the finalization of this handbook. Verify that the facility is in compliance with newly issued regulations.

COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
PM.1.4. FWS facilities should report all NOVs to the Region and Environmental and Facility Compliance (EFC) (MP) **[Revised June 1998].**	Determine if the facility has received an NOV relating to pesticides. Verify that the NOV was reported to the Region and the EFC.
PM.1.5. All pesticides present on the facility must be registered or ruled exempt from the registration requirements (40 CFR 152.15 through 152.30).	Verify that pesticide products at the facility are registered unless the facility or product is considered exempt, such as the following: – certain biological control agents – certain human drugs – treated articles or substances such as paint treated with a pesticide – pheromones and pheromone traps – preservatives for biological specimens – vitamin hormone products – pesticide transferred between registered establishments operated by the same producer – a pesticide distributed or sold under an experimental use permit – a pesticide transferred solely for export – a pesticide distributed or sold under an emergency exemption.

PM.1.6. All facilities must comply with pesticide use requirements unless an emergency exemption has been granted by the USEPA or a crisis exemption by the appropriate authority (40 CFR 166.1, 166.2, 166.20, 166.28, 166.32, 166.45, and 166.50) **[June 1997].**	Verify that pesticides are used according to label instructions unless one or more of the following emergency conditions exist:
	
	– Specific exemptions may be authorized to avoid conditions of:
	  – significant economic loss
	  – significant risk to threatened or endangered species
	  – significant risk to beneficial organisms
	  – significant risk to the environment.
	– Quarantine exemptions may be authorized to control the introduction or spread of any pest new to or unknown to be widespread throughout the United States and its territories.
	– Public health exemptions may be authorized to control a pest that imposes significant risk to human health.
	– Crisis exemptions may be utilized when the time constraint between discovery, and implementation of pesticide use will not allow a specific, quarantine, or public health exemption to be issued.
	
	Verify that applications for exemptions are submitted to the Regional

COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	Administrator in writing and include: – identity of contact persons – a description of the pesticide – the proposed use – any alternative means of control and why those means are not feasible – effectiveness of proposed use – discussion of residues for food uses – discussion of risk information – coordination with other affected state or Federal agencies – notification of registrant or basic manufacturer – description of proposed enforcement program – repeated uses. Verify that exemptions are issued for a specific length of time, as follows: – no more than 1 yr for specific and public health exemptions – for no longer than 3 yr for a quarantine permit, but it may be renewed – no longer than 15 days (unless an application for another type of exemption has been submitted) for a crisis exemption. Verify that any unexpected adverse affects from the use of a pesticide under exemption conditions are being reported to the USEPA. Verify that a report summarizing the use of a pesticide under an exemption was submitted to the USEPA within 6 mo after the expiration of the exemption (3 mo for a crisis exemption) and interim reports are filed annually for quarantine exemptions. Verify that records are maintained for a minimum of 2 yr following the date of expiration of the exemption.
PM.1.7. FWS facilities which use pesticides are	Verify that FWS facilities which use pesticides have provided complete pesticide proposals to the Regional Pest Management Coordinator for

COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
required to provide complete pesticide proposals to the Regional Pest Management Coordinator (RP, 30 FWS AM 12.2 and 30 FWS AM 12.6D(8)) **[Citation Revised June 1998].**	all pesticides used on Service lands under their control. (NOTE: The time frame for submission will be set by the reviewers.) (NOTE: These requirements do not apply to: – protective covenants, easements, contracts, or agreements off Service lands except where they specifically state that the Service is responsible for pest management – management activities on State lands paid for in whole or in part by Federal Aid funds, except where specifically mentioned – research experiments conducted by Service research personnel – pest management activities solely related to control fish and wildlife pathogens and their vectors in hatchery situations or captive breeding programs.)
PM.1.8. Every pesticide product is required to be labeled with specific information (40 CFR 156.10(a)) **[Added January 1999].**	Verify that every pesticide product has a label that clearly shows the following: – the name, brand, or trademark under which the product is sold – the name and address of the producer, registrant, or person for whom it was produced – the net contents – the product registration number – the producing establishment number – an ingredient statement – warning or precautionary statements – the directions for use. Verify that all words, statements, graphic representations, designs, or other information are clearly legible to a person with normal vision and are place with such conspicuousness and expressed in terms such that it is likely to be read and understood by the ordinary individual under customary conditions of purchase and use.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
PM.5 **PESTICIDE APPLICATORS**	
PM.5.1. Persons applying restricted-use pesticides must be certified to apply restricted-use pesticides (40 CFR 171.9).	Determine if pesticide applicators are trained and/or certified. Verify that training recertification is scheduled and performed as required to maintain certification and that certification is relevant to the pest management activities undertaken. Verify the certification status of contractors used for pest management. (NOTE: Check the list of restricted-use pesticides in Appendix 5-1.)
PM.5.2. Personnel routinely applying any pesticides should be trained in safety procedures and application procedures (MP).	Determine if personnel at the facility routinely apply pesticides. Verify that personnel are trained in appropriate handling and use procedures.
PM.5.3. Health monitoring should be provided for government personnel applying pesticides other than bug bombs, space sprays, and no-pest strips (MP).	Verify that all pest management personnel have received baseline physical examinations within 30 days of starting pest management work. Verify that pest management personnel receive additional physical examinations once each year. Verify that cholinesterase tests are given to pest management personnel working regularly with pesticides which contain organophosphates or N-alkyl-carbamates. (NOTE: The Safety Office should be consulted about health concerns related to the pesticides in use at the facility.)

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PESTICIDE APPLICATION **PM.10** **General**	
PM.10.1. Facilities must ensure that the use of pesticides does not jeopardize the existence of threatened or endangered species (50 CFR 402.01(2)(d)).	Determine if surveys have been conducted to identify the presence of threatened or endangered species in areas where pesticides are used. Determine what measures are taken to ensure that threatened or endangered species are not impacted. Verify that applications are made according to label instructions regarding the protection of endangered species.
PM.10.2. Public safety should be ensured when applying or using pesticides (MP).	Verify the elimination of hazardous exposure to the general public by checking for the following: – appropriate signs for treatment area are posted – scheduling for low use periods or restricted usage for a number of days – water use restrictions and reentry times are followed according to the pesticide labels.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
PESTICIDE APPLICATION **PM.20** **Agriculture**	
PM.20.1. Agricultural pesticides must be applied in a manner that workers or other persons, except those knowingly involved in the application, are not exposed either directly or through drift (40 CFR 170.3(a) and 170.4(c)).	Determine if the facility applies agricultural pesticides. Verify that the area being treated is vacated by unprotected persons. (NOTE: These requirements do not pertain to: – mosquito abatement treatment and related public pest control programs – greenhouse treatments which are applied in accordance with labeling directions and restrictions – livestock and other animal treatments which are applied in accordance with labeling directions and restrictions – treatment of golf courses and similar nonagricultural areas which are applied in accordance with labeling directions and restrictions.) Verify that workers are warned when a field is to be treated and when a field has been treated.
PM.20.2. Workers not wearing protective clothing shall not be allowed to enter a field treated with sprays until specific conditions are met (40 CFR 170.3(b) and 170.4(c)).	Verify that workers without protective clothing do not enter fields that have been sprayed until sprays have been dried or dusts have settled. Verify that, if the following pesticides are used, the indicated reentry times are observed: – ethyl parathion: 48 h – methyl parathion: 48 h – guthion: 24 h – demeton: 48 h – azodrin: 48 h – phosalone: 24 h – carbophenothion: 48 h – metasystox-R: 48 h – EPN: 24 h – bidrin: 48 h – endrin: 48 h – ethion: 24 h.

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	(NOTE: These requirements do not pertain to: – mosquito abatement treatment and related public pest control programs – greenhouse treatments which are applied in accordance with labeling directions and restrictions – livestock and other animal treatments which are applied in accordance with labeling directions and restrictions – treatment of golf courses and similar nonagricultural areas which are applied in accordance with labeling directions and restrictions.)

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
PESTICIDE APPLICATION **PM.35** **Dining Facilities** **PM.35.1.** Dining facilities should be notified at least 24 h in advance of a pesticide application (MP).	Verify that food services personnel are notified of scheduled applications.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
PESTICIDE APPLICATION **PM.45** **Documentation**	
PM.45.1. Certified applicators of restricted-use pesticides are required to keeps application records (7 CFR 110.3).	Verify that the certified applicators keep records with the following information: – the brand or product name and the USEPA registration number of the restricted-use pesticide that was applied – the total amount of the restricted-use pesticide that was applied – the location of the application, the size of the area treated, and the crop, commodity, stored product, or site to which a restricted-use pesticide was applied – the month, day, and year of the application – the name and certification number of the certified applicator who applied to supervised the application. Verify that the following information is kept for applications of restricted-use pesticides made on the same day in a total areas of less than one-tenth of an acre: – brand or product name and USEPA registration number – total amount applied – location, designated as spot application followed by a concise description of location and treatment – the month, day, and year of application. Verify that the information is recorded within 14 days of the application. Verify that these application records are retained for 2 yr. Verify that commercial applicators provides a copy of the records to the facility within 30 days. (NOTE: State and local standards may differ for this requirement.)
PM.45.2. Records should be maintained of each	Verify that records are kept on file for a minimum of 2 yr.

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application of a pesticide, whether performed by facility staff or contract labor, and retained at the facility (MP).	

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
STORAGE/MIXING/ PREPARATION AREAS **PM.47** **General**	(NOTE: Storage areas must also meet the general requirements for the storage of hazardous materials found in 29 CFR 1910.106, see Section 3, Hazardous Materials Management.)
PM.47.1. Facilities should store any pesticide, pesticide container, or pesticide residue according to specific restrictions (MP).	Verify that pesticides, pesticide containers, and/or pesticide residues are stored such that it is not inconsistent with labeling. (NOTE: This recommendation is a requirement under OSHA, see *Hazardous Materials Management*.)
PM.47.2. Security measures should assure that only authorized persons can access pesticide storage, mixing, and preparation areas (MP).	Verify that a climb-resistant fence completely encloses the storage, mixing, or preparation area. Verify that vehicles used to transport pesticides have locking compartments.
PM.47.3. Pesticide storage, mixing, and preparation facilities must provide facilities and procedures to ensure safety of personnel (29 CFR 1910.133 and 1910.134) **[December 1997].**	Determine if a ventilation system is specifically provided for all indoor pesticide mixing/preparation areas. Verify that personal protective clothing and equipment is provided and used by pest management personnel. The following equipment depends upon magnitude and type of operations: – respirators – masks – gloves – safety shoes – coveralls – specialized personal protective equipment for fumigation. Verify that operations include health and safety procedures emphasizing good work habits, reduction or elimination of hazards, and use of personal protective equipment.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
PM.47.4. A spill containment system constructed of impervious materials should provide containment for pesticide storage, mixing, preparation and management areas (MP).	Verify that there is curbing around the required areas. Determine if there are drains or cracks in floors. Determine if pest management shop personnel are familiar with spill response procedures. Verify that spill response procedures are written and understood by staff.
PM.47.5. Storage facilities for pesticides should have ventilation at a rate of 10 air changes/hour (MP).	Verify that storage facilities for pesticides have ventilation at a rate of 10 air changes/hour.
PM.47.6. Storage facilities for pesticides should have separate drainage systems and fire extinguishers (MP).	Verify that fire extinguishers are installed near the door of pesticide storage rooms. Verify that the drainage systems are separated from the regular systems. Verify that the drainage systems are separate from storm and sanitary sewers.
PM.47.7. Pesticide storage areas should be inspected quarterly by certified applicator personnel and safety and fire prevention officer (MP).	Verify that pesticide storage areas are inspected quarterly.
PM.47.8. An emergency deluge shower and/or eyewash station should be available in the pesticide storage, mixing, and preparation area (MP) **[Added March 1998].**	Verify that an emergency deluge shower and/or eyewash station are available in the pesticide storage, mixing, and preparation area.
PM.47.9. Facilities with	Verify that, where the eyes and body of any person may be exposed

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personnel exposed to injurious corrosive materials must have emergency use facilities available (29 CFR 1910.151(c)) **[Added July 1999].**	to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body are provided within the work area for immediate emergency use.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
STORAGE, MIXING, PREPARATION AREAS **PM.48** **Highly and Moderately Toxic Pesticides**	
PM.48.1. Storage facilities for pesticides and excess pesticides classed as highly toxic or moderately toxic and are required to be labeled with DANGER, POISON, WARNING, or the skull and cross bones symbol should meet specific structural requirements (MP).	Verify that storage is in a dry, separate room, building, or covered area where fire protection is provided. Verify that, when relevant and practicable, the entire storage facility is secured by a climb-proof fence and the doors and gates are kept locked. Verify that pesticides are not stored near food or feed.
PM.48.2. The storage of pesticides and excess pesticides classed as highly toxic or moderately toxic and are required to be labeled with DANGER, POISON, WARNING, or the skull and cross bones symbol should meet specific operational requirements (MP).	Verify that pesticide containers are stored with the label plainly visible. Verify that all containers are in good condition. Verify that the lids and bungs on metal or rigid plastic containers are tight. Verify that the pesticides are segregated. Verify that a complete inventory is kept indicating the number and identity of containers in a storage unit. Verify that containers are regularly inspected for corrosion and leaks and that absorbent material is available for spill cleanup. Verify that diluted oil based pesticides are stored separately from other materials since they are flammable. Verify that excess pesticides and containers are segregated.
PM.48.3. Pest	Determine if facilities are available for personnel decontamination and

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
management programs which use pesticides classed as highly toxic or moderately toxic and are required to be labeled DANGER, POI SON, WARNING, or the skull and cross bones symbol on the label should have decontamination facilities (MP).	where they are located. Determine if facilities are available for the decontamination of equipment, including vehicles which have been used for pesticide applications. Verify that berms, curbing, surfaces, and catchment drains which are used to impound washwater resulting from decontamination are impervious. Verify that drains impound washwater and do not connect to sanitary sewer or stormwater systems. Verify that the procedure for disposal of washwater resulting from decontamination activities is the same as for excess pesticides.
PM.48.4. Equipment used for pesticides applications may not be removed from a decontamination site unless thoroughly decontaminated (MP).	Verify that, prior to removal from a site, vehicles are decontaminated.
PM.48.5. Storage of pesticides and excess pesticides that are classed as highly toxic or moderately toxic and are required to be labeled DANGER, POI SON, WARNING, or with the skull and crossbones symbol should meet specific requirements (MP).	Verify that the site location, where possible, is in an area where flooding is unlikely and where hydrogeologic conditions prevents contamination of any water system by runoff or percolation by: – inspecting areas surrounding facilities and determining proximity to surface water – noting location relative to floodplains, depth of groundwater, and general soil types and typical permeabilities – verifying that the spill management system is in existence. Verify that an environmental monitoring system exists for facilities which do not have spill management system when the facility handles large quantities of pesticides and is located near sensitive environmental receptor. The reviewer should: – note approximate quantity of pesticides and location of sensitive environmental receptors – check whether groundwater, or surface water, or air monitoring program exists to determine any effects caused by pesticide

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	storage, mixing and preparation – inspect facility operations and layout to determine if operations are likely to allow runoff of water which may have contacted pesticides. Verify that, when needed, drainage from the site is contained by natural or artificial barriers or dikes.
PM.48.6. Facilities which store/use pesticides that are classed as highly toxic or moderately toxic and are required to be labeled DANGER, POISON, WARNING, or the skull and crossbones symbol should provide facilities and procedures to ensure the safety of personnel (MP).	Verify that no food consumption, drinking, smoking, or tobacco use is undertaken in any area where pesticides are present. Verify that the following practices are performed in pest management operations: – persons handling pesticides keep hands away from mouths and eyes and wear rubber gloves during all pesticide handling – persons handling pesticides wash hands immediately upon completion of working with pesticides and always prior to eating, smoking, or using toilet facilities – persons handling concentrated pesticides wear protective clothing which is removed if found to be contaminated – a stock of protective clothing is available – self-contained breathing apparatus and impermeable suits are available when handling pesticides which present the potential of being absorbed through the skin – inspections are made once a month to determine if any pesticide containers are leaking – pesticide containers are inspected for leakage prior to handling – unauthorized persons are not allowed in storage areas. Verify that the following accident prevention measures are done: – containers are not manhandled – unauthorized persons are not allowed in the storage area – pesticides are not stored next to food or feed or other articles intended for consumption by humans or animals – all vehicles are inspected prior to departure.
PM.48.7. Pesticide storage facilities and equipment which contain	Verify that signs which read DANGER, POISON, PESTICIDE STORAGE, are placed on or near entries to storage facilities.

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or use pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol should have signs and safety procedures posted (MP).	Verify that safety precautions and accident prevention measures are posted. Verify that an inventory of pesticides is displayed outside of the storage facility identifying all chemicals in storage. Verify that mobile equipment used for pesticide applications is labeled CONTAMINATED WITH PESTICIDES.
PM.48.8. Where large quantities of pesticides classed as highly toxic or moderately toxic and labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol are being stored, or other conditions warrant, the local fire department, hospitals, public health officials, and police department should be notified in writing that pesticides are being stored in the event of a fire (MP).	Verify that notification has been submitted and includes a statement of the hazards that pesticides may be present during a fire. Verify that a floor plan of the storage facility indicating the location of the different pesticide classifications has been submitted to the fire department. Verify that the fire chief has the home telephone numbers of the person(s) responsible for the pesticide storage facility.

COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
PM.55 **DISPOSAL**	
PM.55.1. Facilities should dispose of any pesticide, pesticide container, or pesticide residue according to specific restrictions (MP).	Verify that pesticides, pesticide containers, and/or pesticide residues are disposed of such that: – disposal is consistent with labeling – open dumping of pesticides or pesticide containers is not done – open burning is not done except when allowed by state and local regulation – water dumping or ocean dumping does not occur.
PM.55.2. Organic pesticides, except organic mercury, lead, cadmium, and arsenic compounds should be disposed of according to specific procedures (MP).	Determine if the facility uses organic pesticides. Verify that organic pesticides are disposed of through incineration at an incinerator which meets the air quality standards for gaseous emissions, or in a specially designated landfill if incineration is not available, or by another approved method. (NOTES: Municipal solid waste incinerators may be allowed to be used to incinerate pesticides and pesticide containers if they meet criteria of the state.)
PM.55.3. Metallo-organic pesticides, except organic mercury, lead, cadmium, or arsenic compounds should be disposed of according to specific procedures (MP).	Determine if the facility uses metallo-organic pesticides. Verify that metallo-organic pesticides are subjected to an appropriate chemical or physical treatment to recover the heavy metals from the hydrocarbon structure prior to disposal. Verify that metallo-organic pesticides are disposed of through incineration at an approved incinerator, or in a specially designated landfill, or by another approved method.
PM.55.4. Organic mercury, lead, cadmium, arsenic, and all inorganic pesticides should be disposed of according to specific procedures (MP).	Determine if the facility uses organic mercury, lead, cadmium, arsenic, or any inorganic pesticides. Verify that these pesticides are converted to a nonhazardous compound and the heavy metal resources are recovered. Verify that, if chemical deactivation facilities are not available, these pesticides are encapsulated and buried in a specially designated landfill and records sufficient to permit location and retrieval are maintained. Determine if an alternate method of disposal has been approved.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
PM.55.5. Containers should be disposed of according to their classification as either a Group I, Group II, or Group III container (MP).	Determine which of the following types of containers the facility has onsite: – Group I Containers: combustible containers which formerly contained organic or metallo-organic pesticides – Group II Containers: noncombustible containers which formerly held organic or metallo-organic pesticides – Group III Containers: containers (both combustible and noncombustible) which formerly held organic mercury, lead, cadmium, or arsenic or inorganic pesticides. Verify that Group I containers are disposed of in an incinerator or buried in a specially designated landfill. (NOTE: Small quantities of Group I containers may be burned in open fields by the user of the pesticide when allowed by the state.) Verify that Group II containers are triple rinsed. Verify that Group II containers in good condition are returned to the manufacturer, formulator, or drum reconditioner to reuse with the same chemical class of pesticides. Verify that Group II containers which are going to be transported to a facility for recycle as scrap metal or for disposal are punctured. Determine if rinsed Group II containers are crushed and disposed of in a landfill according to state or local requirements. Verify that unrinsed Group II containers are disposed of in a specially designated landfill or incinerated. Verify that Group III containers which are not rinsed are encapsulated and disposed of in a specially designated landfill. (NOTE: Group III containers which are rinsed may be disposed of in a sanitary landfill.)
PM.55.6. Pesticide residues and rinse liquids should be added to spray	Verify that pesticide residues or rinse liquids are reused. Verify that, if they are not reused, they are disposed of according to

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mixtures or disposed of according to their pesticide type (MP).	their pesticide type.

Appendix 5-1

Restricted-Use Pesticides
(40 CFR 152.175)

The following uses of pesticide products containing the active ingredients specified below have been classified for restricted use and are limited to use by or under the direct supervision of a certified applicator.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Acrolein	As sole active ingredient. No mixtures registered.	All uses.	Restricted	Inhalation hazard to humans. Residue effects on avian species and aquatic organisms.
Aldicarb	As sole active ingredient. No mixtures registered.	Ornamental uses (indoor and outdoor). Agricultural crop uses.	do Under further evaluation.	Other hazards-accident history.
Aluminum phosphide	As sole active ingredient. No mixtures registered.	do	do	Inhalation hazard to humans.
Azinphosmethyl	All liquids with a concentration greater than 13.5%. All other formulations.	do do	do Under further evaluation.	do
Carbofuran	All concrete suspensions and wettable powders 40% and greater. All granular formulations. All granular and fertilizer formulations.	do Rice All uses except rice.	do Under evaluation. do	Acute inhalation toxicity.
Chloropicrin	All formulations greater than 2%.	All uses. Rodent control	Restricted Restricted	Acute inhalation toxicity. Hazard to

	All formulations. All formulations 2% and less.	Outdoor uses (other than rodent control).	Unclassified	nontarget organisms.
Clonitralid	All wettable powders 70% and greater. All granulars and wettable powders. Pressurized sprays 0.55% and less.	All uses. Molluscide uses. Hospital antiseptics.	do do Unclassified	Acute inhalation toxicity. Effects on aquatic organisms.
Dicrotophos	All liquid formulations 8% and greater.	All uses.	Restricted	Acute dermal toxicity; residue effects on avian species (except for tree injections).
Disulfoton	All emulsifiable concentrates 65% and greater, all emulsifiable concentrates and concentrate solutions 21% and greater with fensulfothion 43% and greater, all emulsifiable concentrates 32% and greater in combination with 32% fensulfothion and greater. Nonaqueous solution 95% and greater. Granular formulations 10% and greater.	do Commercial seed treatment. Indoor uses (greenhouse).	Restricted Restricted do	do Acute inhalation toxicity. Acute dermal toxicity. Acute inhalation toxicity.
Ethoprop	Emulsifiable concentrates 40% and	do	do	Acute dermal

	greater. All granular and fertilizer formulations.	 do	 Under evaluation.	toxicity.
Ethyl parathion	All granular and dust formulations greater than 2% fertilizer formulations, wettable powders, emulsifiable concentrates, concentrated suspensions, concentrated solutions. Smoke fumigants. Dust and granular formulations 2% and below.	do do do	Restricted do do	Inhalation hazard to humans. Acute dermal toxicity. Residue effects or mammalian, aquatic, avian species. Inhalation hazard to humans. Other hazards accident history.
Fenamiphos	Emulsifiable concentrates 35% and greater.	do	do	Acute dermal toxicity.
Fonofos	Emulsifiable concentrates 44% and greater. Emulsifiable concentrates 12.6% and less with pebulate 50.3% and less.	All uses. Tobacco	do Unclassified	Acute dermal toxicity.
Methamidophos	Liquid formulations 40% and greater. Dust formulations 2.5%	All uses.	Restricted	Acute dermal toxicity; residue effects on avian species. Residual effects on avian

	and greater.	All uses.	Restricted	species.
Methidathion	All formulations.	All uses except stock safflower and sunflower.	Restricted	Residue effects on avian species.
	All formulations.	Nursery stock, safflower, and sunflower.	Unclassified	Residue effects on avian species.
Methomyl	As sole active ingredient in 1% to 2.5 baits (except 1% fly bait).	Nondomestic out door agricultural crops, ornamental and turf. All other registered uses.	Restricted.	Residue effects on mammalian species.
	All concentrated solution formulations.	do		Other hazards accident history.
	90% wettable powder formulations (not in water soluble bags).	do	do	do
	90% wettable powder formulation in water soluble bags.	do	do	
	All granular formulations.	do	Unclassified	
	25% wettable powder formulations.	do	do	
	In 1.24% to 2.5% dusts as sole active ingredient and in mixtures with fungicides and chlorinated hydrocarbon, inorganic phosphate and biological insecticides.	do	do	
Methylbromide	All formulations in containers greater than	All uses.	Restricted	Other hazards-

	1.5 lb.			accident history.
	Containers with not more than 1.5 lb of methyl bromide with 0.25% to chloropicrin as an indicator.	Single applications (nondomestic use) for soil treatment in closed systems.	Unclassified	
	Containers with not more than 1.5 lb having no indicator.	All uses.	Restricted	do
Methyl parathion	All dust and granular formulations less than 5%	do	do	Other hazards-accident history. All foliar applications restricted based on residue effects on mammalian and avian species.
	Microencapsulated. All dust and granular formulations 5% and greater and all wettable powders and liquids.	do	do	Residue effects on avian species. Hazard to bees. Acute dermal toxicity. Residue effects on mammalian and avian species.
Nicotine (alkaloid)	Liquid and dry formulations 14% and above.	Indoor (green house).	Restricted	Acute inhalation toxicity.
	All formulations.	Applications to cranberries.	Restricted	Effects on aquatic organisms.
	Liquid and dry formulations 1.5% and less.	All uses (domestic and nondomestic).	Unclassified	
Paraquat (dichloride) and paraquat	All formulations and concentrations except those listed below.	All uses.	Restricted	Other hazards. Use and accident history, human

bis(methylsulfate)	Pressurized spray formulations containing 0.44% Paraquat bis(methyl sulfate) and 15% petroleum distillates as active ingredients.	Spot weed and grass control.	do	toxicological data.
	Liquid fertilizers containing concentrations of 0.025% paraquat dichloride and 0.03% atrazine; 0.03% paraquat dichloride and 0.37% atrazine, 0.04% paraquat dichloride and 0.49% atrazine.	All uses.	Unclassified	
Phorate	Liquid formulations 65% and greater.	do	Restricted	Acute dermal toxicity. Residue effects on avian species (applies to foliar applications only). Residue effects on mammalian species (applies to foliar application only).
	All granular formulations.	Rice	Restricted	Effects on aquatic organisms.
Phosphamidon	Liquid formulations 75% and greater.	do	do	Acute dermal toxicity. Residue effects on mammalian species. Residue effects on avian species.
	Dust formulations 1.5% and greater.	do	do	Residue effects on mammalian

				species.
Picloram	All formulations and concentrations except tordon 101R.	do	do	Hazard to nontarget organisms (specifically non target plants both crop and non crop).
	Tordon 101 R forestry herbicide containing 5.4% picloram and 20.9% 2, 4-D.	Control of unwanted trees by cut surface treatment.	Unclassified	
Sodium cyanide[3]	All capsules and ball formulations.	All uses.	Restricted	Inhalation hazard to humans.
Sodiumfluoroacetate	All solutions and dry baits.	do	do	Acute oral toxicity. Hazard to nontarget organisms. Use and accident history.
Strychnine	All dry baits pellets and powder formulations greater than 0.5%.	do	do	Acute oral toxicity. Hazard to nontarget avain species. Use and accident history.
	All dry baits pellets and powder formulations.	All uses calling for burrow builders.	do	Hazard to nontarget organisms.
	All dry baits, and pellets, and powder formulations 0.5% and below.	All uses except subsoil.	do	do
	do	All subsoil uses.	Unclassified	do
Sulfotepp	Sprays and smoke generators.	All uses.	Restricted	Inhalation hazard to humans.
Zinc Phosphide	All formulations 2% and less.	All domestic uses and nondomestic	Unclassified	

		uses in and around buildings.		
	All dry formulations 60% and greater.	All uses.	Restricted	Acute inhalation toxicity.
	All bait formulations.	Nondomestic out door uses (other than around buildings).	Restricted	Hazard to nontarget organisms.
	All dry formulation 10% and greater.	Domestic uses.	Restricted	Acute oral toxicity.

*do means same as above.

[1] "Under evaluation" means no classification decision has been made and the use formulation in question is still under active review within EPA.

[2] Percentages given are the total of dioxathion plus related compounds.

[3] (NOTE: M-44 sodium cyanide capsules may only be used by certified applicators who have also taken the required additional training.)

SECTION 6

PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT

U.S. ECAH, September 1999

A. Applicability

This section applies to FWS facilities which store, transport, dispose of, or use petroleum based fuels, oils, or lubricants. This section presents review action items that respond to regulations, procedures, and organizational mechanisms designed to prevent or limit the accidental release of POL materials to surface water, groundwater, or soils. Procedures designed to review the control of volatile organic compounds (VOCs) from POL sources are addressed in Section 1, Air Emissions Management.

This section covers POL management of bulk storage tanks, organizational tanks, pipeline delivery systems, truck fill stands, and immediate operating storage areas. POL materials addressed include petroleum, diesel fuel, and lubricating oils. The storage of POL materials in underground storage tanks (USTs) is addressed in Section 9, Underground Storage Tank (UST) Management.

B. Federal Legislation

- *The Water Quality Improvement Act* of 1974. This law was the primary Federal law governing the discharge of oil into navigable waters. This regulation prohibits the discharge of harmful quantities of oil into navigable waters. 40 Code of Federal Regulations (CFR) 110, *Protection of Environment - Discharge of Oil*, defines harmful quantities as those discharges which will cause a sheen or discoloration of the surface of the water or a sludge or emulsion to be deposited beneath the surface of the water.

- *The Federal Water Pollution Control Act.* This act, commonly known as the *Clean Water Act* (CWA), as amended 4 February 1987, 33 U.S. Code (USC) 1251-1387, Public Law (PL) 100-4, governs the control of water pollution in the nation. The objective of the act is to restore and maintain the chemical, physical and biological integrity of the nation's waters. Federal agencies are required to comply with all Federal, state, interstate, and local water pollution control requirements both substantively and procedurally (33 USC 1323(a)).

- *The Oil Pollution Act* (OPA) of 1990. This law, Public Law (PL) 301-308 (33 USC 2701- 2761, et al.) as amended, requires the prevention of oil pollution into navigable waters by tank vessels.

- *The Resource Conservation and Recovery Act* (RCRA), Subtitle C. This law, PL 98-616 (USC 6921-6939b), establishes standards and procedures for the handling, storage, treatment, and disposal of hazardous waste. Specifically, RCRA prohibits the placement of bulk or noncontainerized liquid hazardous waste or free liquids containing hazardous waste into a landfill. It also prohibits the land disposal of specified wastes and disposal of hazardous waste through underground injection within 1/4 mi of an underground source of drinking water.

- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards.* This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or to correct situations that

are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

- Federal regulations used to develop the checklist include:

  - EO 12088, *Federal Compliance with Pollution Control Standards.*
  - 33 CFR 154, *Facilities Transferring Oil or Hazardous Materials in Bulk.*
  - 33 CFR 158, *Reception Facilities for Oil, noxious Liquid Substances, and Garbage.*
  - 40 CFR 110, *Discharge of Oil.*
  - 40 CFR 112, *Oil Pollution Prevention.*
  - 40 CFR 266, *Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities.*
  - 40 CFR 279, *Standards for the Management of Used Oil.*
  - 49 CFR 194, *Response Plans for Onshore Oil Pipelines.*
  - 49 CFR 195, *Transportation of Hazardous Liquids by Pipeline.*

C. State/Local Regulations

Many states and some major metropolitan and regional planning agencies have developed legislation and implemented regulations which closely parallel the Federal regulations. Some, however, may differ in important ways, and the evaluator should obtain copies of the state or local requirements for the Oil and Hazardous Substances Pollution Contingency (OHSPC) plan and the Spill Prevention, Control, and Countermeasures (SPCC) plan, where appropriate, and review them for those differences before conducting the evaluations. In particular, the evaluator should check for differences in the definitions of reportable quantities and the specific procedures for reporting spills that may exist in state/local regulations.

D. FWS/DOI Manuals

No applicable manuals are final as of the publication of this handbook.

E. Key Compliance Requirements

- Aboveground Storage Tanks (AST) - All bulk storage tanks are required to be provided with a secondary means of containment for the entire contents of the largest single tank, plus sufficient freeboard to allow for precipitation. ASTs are required to undergo periodic integrity testing and keep a written log of this testing. Alternatively, when prevention systems or equivalents are not practicable, a strong oil spill contingency plan and/or a written commitment of manpower, equipment, and materials required to expeditiously control and remove any harmful quantity of oil discharged are needed Drainage of rainwater from diked areas must be controlled by a valve that is closed when not in active use. Drainage water that is determined to contain petroleum products in harmful quantities must be treated before discharge to meet applicable water quality standards (40 CFR 112.7(e)(1) through 112.7(e)(2)) **[Revised January 1999].**

- Mobile/Portable Tanks - Onshore mobile or or portable oil storage tanks are required to be positioned to prevent spilled oil from reaching navigable waters. A secondary means of containment must be provided, such as dikes or catchment basins, for the largest single compartment or tank (40 CFR 112.7(e)(2)(xi)) **[Added April 1999].**

- SPCC Plans - Facilities that store, transport, or dispense petroleum products are required to prepare an SPCC plan, unless certain criteria are met. The SPCC plan is required to contain

general information about the facility, name and title of the designated coordinator, and an inventory of all storage, handling, and transfer facilities. Each SPCC plan must be reviewed at least once every 3 yr, unless it is an exempted facility. The SPCC plan must be reviewed and/or amended when there is a material change in facility design, construction, operation, or maintenance that alters potential for an oil spill. Each SPCC plan and any amendments must be certified by a registered professional engineer and the plan and each amendment must be prepared according to sound engineering practices. A copy of the SPCC plan is required to be available at sites that are normally attended at least 8 h/ day where there is a potential for a discharge. All facility personnel involved with the management and handling of oil must receive training (40 CFR 112.3, 112.5, and 112.7(e)(10)).

- Response Plans - Nontransportation related onshore facilities that, because of location, could reasonably be expected to cause substantial harm to the environmental by discharging oil into or on the navigable waters or adjoining shoreline are required to develop response plans. A facility could, because of its location, reasonably be expected to cause substantial harm if it meets any of the following criteria:
  - the facility transfers oil over water to or from vessels and has a total oil storage capacity greater than or equal to 42,000 gal
  - the facility's total oil storage capacity is greater than or equal to 1 million gal and one of the following is true:
    - the facility does not have secondary containment for each aboveground area sufficiently large to contain the capacity of the largest AST within each storage area plus sufficient freeboard to allow for precipitation
    - the facility is located at a distance such that discharge from the facility could cause injury to fish and wildlife and sensitive environment
    - the facility is located at a distance such that a discharge from the facility would shut down a public drinking water intake
    - the facility has had a reportable oil spill in an amount greater than or equal to 10,000 gal within the last 5 yr.

- Discharges/Spills - A discharge of oil into navigable waters of the United States, or adjoining shorelines, or into areas that may affect natural resources belonging to or under the exclusive management authority of the United States must be reported to the National Response Center (NRC). Facilities are not allowed to add dispersants or emulsifiers to oils that are discharged (40 CFR 110.2 through 110.10).

- Discharge Prevention/Cleanup - Appropriate containment and/or diversionary structures and cleanup equipment are to be readily available to prevent discharged petroleum products from reaching navigable water courses. Alternatively, when prevention systems or equivalents are not practicable, a strong oil spill contingency plan and/or a written commitment of manpower, equipment, and materials required to expeditiously control and remove any harmful quantity of oil discharged are needed (40 CFR 112.7(c)) **[Revised January 1999]**.

- Piping Systems - Buried piping at facility transfer operations, pumping activities, and in- plant processing is required to have a protective wrapping and coating to be cathodically protected if soil conditions warrant (40 CFR 112.7(e)(3)(i) and 112.7(e)(3)(iv)).

- Onshore Oil Pipelines - Facilities with onshore oil pipelines that, because of location, could reasonably be expected to cause substantial harm to the environment by discharging oil into navigable waters are required to prepare a response plan. Copies of the response plan are required to be submitted to the U.S. Environmental Protection Agency (USEPA) Research and Special Programs Administration (RSPA) for approval. Copies of the response plan are required to be kept at the operators headquarters, pump stations, and other places where response activities

might be conducted. Training is required for the implementation of the Response Plan. The Response Plan is required to be reviewed every 3 yr from the date of submission and modified to address new or different operating conditions or information (49 CFR 194).

- Service Stations - The storage of liquids at service stations, specifically Class I liquids, has to be done in containers that are secure and prevents the excess release of vapors (29 CFR 1910.106(g)).

- Used Oil - Although used oil has not been declared a hazardous waste at the Federal level, it does need to be stored, handled, and documented according to specific requirements depending on whether the facility is a used oil generator, a used oil collection center and aggregation point, a used oil transporter, a used oil burner, or a used oil marketer (40 CFR 279).

- Recordkeeping - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

F. Key Compliance Definitions

- *Container* - any portable device in which materials is stored, transported, treated, disposed of, or otherwise handled (40 CFR 279.1).

- *Contiguous Zone* - the entire zone established or to be established by the United States under article 24 of the Convention on the Territorial Sea and Contiguous Zone (CWA, Section 311).

- *Continuous Discharge* - a discharge occurring without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities (40 CFR 123.3).

- *Daily Discharge* - the discharge of a pollutant measured during a calendar day or any 24 h period that reasonably represents the calendar day for purposes of sampling (40 CFR 122.2).

- *Direct Discharge* - the discharge of a pollutant (40 CFR 122.2).

- *Discharge* - when used in relation to Section 311 of the Act, includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping, but excludes (CWA, Section 311):
    1. discharges in compliance with a permit
    2. discharges resulting from circumstances identified and reviewed and made a part of the public record with respect to an issued permit and subject to a condition in the permit
    3. continuous or anticipated intermittent discharges from a point source, identified in a permit application that are caused by events occurring within the scope of relevant operating or treatment systems.

- *Do-It-Yourself (DIY) Used Oil Collection Center* - any site or facility that accepts aggregates and stores used oil collected only from household DIYs (40 CFR 279.1).

- *Environmentally Sensitive Area* - an area of environmental importance which is in or adjacent to navigable waters (49 CFR 194.5).

- *Existing Tank* - a tank that is used for the storage or processing of used oil and that is in operation, or a tank for which installation has commenced on, or prior to, the effective date of the authorized used oil program for the state in which the tank is located (40 CFR 279.1).

- *Fish and Wildlife and Sensitive Environments* - this means areas that may be identified by either their legal designation or by evaluations of Area Committees (for planning) or members of the Federal On-Scene Coordinator's spill response structure (during responses) (40 CFR 112.2).

- *Household "Do-It-Yourselfer" Used Oil* - oil that is derived from households, such as used oil generated by individuals who generate used oil through the maintenance of their personal vehicles (40 CFR 279.1).

- *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.

- *Navigable Waters* - the waters of the United States, including the territorial seas. Navigable waters do not include prior converted cropland. The terms include (40 CFR 100.2):
    1. all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide
    2. interstate waters, including interstate wetlands
    3. all other waters such as intra-state lakes, rivers, streams (including intermittent streams), mudflats, sandflats, and wetlands, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
        a. that are or could be used by interstate or foreign travelers for recreational or other purposes
        b. from which fish or shellfish are or could be taken and sold in interstate or foreign commerce
        c. that are used or could be used for industrial purposes by industries in interstate commerce
    4. all impoundments of waters otherwise defined as navigable waters under this section
    5. tributaries of waters identified above, including adjacent wetlands
    6. wetlands adjacent to waters identified above.

- *New Tank* - a tank that will be used to store or process used oil and for which installation has started after the effective date of the authorized used oil program for the state in which the tank is located (40 CFR 279.1).

- *Offshore Facility* - any facility of any kind located in, on, or under any of the navigable waters of the United States, and any facility or any kind that is subject to the jurisdiction of the United States and is located in, on, or under any other waters, other than a vessel or a public vessel (CWA, Section 311 and 33 CFR 153.103).

- *Off-Specification Oil* - used oil burned for energy recovery and any fuel produced from used oil that exceeds the following allowable limits (40 CFR 279):

Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum

Flash Point	100 °F minimum
Total halogens	4000 ppm maximum

- *Oil* - when used in relationship to Section 311 of the Act, means oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil (CWA, Section 311 and 33 CFR 153.103).

- *Onshore Facility* - any facility (including but not limited to, motor vehicles and rolling stock) of any kind located in, on, or under any land within the United States, other than submerged land (CWA, Section. 311 and 33 CFR 153.103).

- *Onshore Oil Pipeline Facilities* - new and existing pipe, rights of way and any equipment, facility, or building used in the transportation of oil located in, on, or under, any land within the United States other than submerged land (49 CFR 194.5).

- *Operator* - in relationship to onshore oil pipeline facilities, a person who owns or operates onshore oil pipeline facilities (49 CFR 194.5).

- *Pipeline* - all parts of an onshore pipeline facility through which oil moves, including, but not limited to, line pipe, valves, and other appurtenances connected to the line pipe, pumping units, fabricated assemblies associated with pumping units, metering and delivery stations and fabricated assemblies therein, and breakout tanks (49 CFR 194.5).

- *Point Source* - any discernible confined and discrete conveyance including but not limited to a pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater (40 CFR 122.2 and 401.11(d)).

- *Processing* - means chemical or physical operations designed to produce from used oil, or to make used oil more amenable for production, fuel oils, lubricants, or other used oil- derived product. Processing includes, but is not limited to blending used oil with virgin petroleum products, blending used oils to meet the fuel specification, filtration, simple distillation, chemical or physical separation and re-refining (40 CFR 279.1).

- *Public Vessel* - a vessel owned or bare boat chartered and operated by the United States, or by a state or political subdivision thereof, or by a foreign nation, except when such vessel is engaged in commerce (CWA, Sect. 311 and 33 CFR 153.103).

- *Qualified Individual* - an English-speaking representative of an operator, located in the United States, available on a 24-h basis, with full authority to: activate and contract with required oil spill removal organizations; activate personnel and equipment maintained by the operator; act as liaison with the On-Scene Coordinator (OSC); and obligate any funds required to carry out all required or directed oil response activities (49 CFR 194.5).

- *Re-Refining Distillation Bottoms* - the heavy fractions produced by vacuum distillation of filtered and dehydrated used oil. The composition of still bottoms varies with column operation and feedback (40 CFR 279.1)

- *Response Activities* - the containment and removal of oil from the water and shorelines, the temporary storage and disposal of recovered oil, or the taking of other actions as necessary to minimize or mitigate damage to the environment (49 CFR 194.5).

- *Response Area* - the inland zone or coastal zone, as defined in the National Contingency Plan (NCP), in which response activity is occurring (49 CFR 194.5).

- *Response Plan* - the operator's core plan and the response zone appendices for responding, to the maximum extent practicable, to a worst case discharge of oil, or the substantial threat of such a discharge (49 CFR 194.5).

- *Response Zone* - a geographic area, either along a length of pipeline or including multiple pipelines, containing one or more adjacent line sections, for which the operator must plan for the deployment of, and provide, spill response capabilities (49 CFR 194.5).

- *Sheen* - an iridescent appearance on the surface of the water (40 CFR 110.1).

- *Sludge* - an aggregate of oil or oil and other matter of any kind in any form other than dredged spoil, having a combined specific gravity equivalent to or greater than water (40 CFR 110.1).

- *Spill Event* - a discharge of oil into or upon the navigable waters of the United States or adjoining shorelines in harmful quantities (40 CFR 112.3).

- *Spill Prevention, Control, and Countermeasure (SPCC) Plan* - the SPCC plan shall be a carefully thought-out plan prepared in accordance with good engineering practices, and which has the full approval of management at a level with authority to commit the necessary resources (40 CFR 112.3).

- *Tank* - any stationary device, designed to contain an accumulation of used oil, which is constructed primarily of nonearthen materials which provides structural support (40 CFR 279.1).

- *Used Oil* - any oil that has been refined from crude oil or any synthetic oil that has been used and as a result of such use is contaminated by physical or chemical impurities (40 CFR 279.1).

- *Used Oil Aggregation Point* - any site or facility that accepts, aggregates, and/or stores used oil collected only from other used oil generation sites owned or operated by the owner or operator of the aggregation point, from which used oil is transported to the aggregation point in shipments of no more than 55 gal. Used oil aggregation points may also accept used oil from household DIYs (40 CFR 279.1).

- *Used Oil Burner* - a facility where used oil not meeting the specification requirements is burned for energy recovery (40 CFR 279.1).

- *Used Oil Collection Center* - any site or facility that is registered/licensed/permitted/recognized by a state/county/municipal government to manage used oil and accepts/aggregates and stores used oil collected from used oil generators who bring used oil to the collection centers in shipments of no more than 55 gal. Used oil collection centers may accept used oil from household DIYs (40 CFR 279.1).

- *Used Oil Fuel Marketer* - any person who conducts either of the following activities (40 CFR 279.1):
    1. directs a shipment of off-specification used oil from their facility to a used oil burner
    2. first claims that used oil that is to be burned for energy recovery meet used oil fuel specifications.

- *Used Oil Generator* - any person, by site, whose act or process produces used oil or whose act first causes used oil to become subject to regulation (40 CFR 279.1).

- *Used Oil Processor/Re-refiner* - a facility that processes used oil (40 CFR 279.1).

- *Used Oil Transfer Facility* - any transportation related facility, including loading docks, parking areas, storage areas, and other areas where shipments of used oil are held for more than 24 h during the normal course of transportation and not longer than 35 days (40 CFR 279.2).

- *Used Oil Transporter* - any person who transports used oil, any persons who collects used oil from more than one generator and transports the collected oil, and owners and operators of used oil transfer facilities. Used oil transporters may consolidate or aggregate loads of used oil for purposes of transportation, but, with the following exception, may not process used oil. Transporters may conduct incidental processing operations that occur in the normal course of used oil transportation (e.g., settling and water separation), but that are not designed to produce or make more amenable for production of used oil derived products or used oil fuel (40 CFR 279.1).

- *Vessel* - every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water other than a public vessel (CWA, Section 311).

- *Wetlands* - those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include playa lakes, swamps, marshes, bogs, and similar areas such as sloughs, prairie potholes, wet meadows, prairie river overflows, mudflats, and natural ponds (40 CFR 110.1).

- *Worst Case Discharge* - the largest foreseeable discharge of oil, including a discharge from fire or explosion, in adverse weather conditions (49 CFR 194.5).

PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT

GUIDANCE FOR CHECKLIST USERS

	REFER TO CHECKLIST ITEMS:
All Facilities	PO.1.1 through PO.1.5
Spill Plans	PO.5.1 through PO.5.8
Discharges/Spills	PO.15.1 and PO.15.2
POL Storage Areas	
General	PO.20.1 through PO.20.3
Aboveground Storage Tanks	PO.40.1 through PO.40.5
Pipelines	PO.45.1 through PO.45.11
POL Loading and Unloading	PO.55.1 and PO.55.2
Used Oil	
General	PO.60.1
Generators	PO.65.1 through PO.65.8
Collection Centers and Aggregation Points	PO.70.1 through PO.70.3
Transportation	PO.75.1 through PO.75.9
Burners	PO.80.1 through PO.80.7
Marketing	PO.85.1 through PO.85.5
Dust Suppression	PO.90.1

PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT

Records To Review

- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)
- Spill Prevention, Control and Countermeasure (SPCC) Plan
- Records of spill response training programs
- Used oil disposal records

Physical Features To Inspect

- Refueling facilities, including:
  - Above and belowground storage tanks and dikes
  - Venting
  - Fill pipe
  - Gauges
- Washrack areas
- Vehicle maintenance areas
- Oil separators
- Oil and hazardous substance site
- Fire training pits
- Grease racks

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
PO.1 **ALL FACILITIES**	
PO.1.1. The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), interagency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/ identifying information as the citation).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, interagency agreements, or equivalent state enforcement actions.
PO.1.2. FWS facilities are required to comply with state and local regulations (EO 12088, Section 1-1).	Verify that the facility is complying with state and local requirements. Verify that the facility is operating according to permits issued by the state or local agencies. (NOTE: Issues typically regulated by state and local agencies include: – spill management – handling of wastewater and fuel sludge from tank cleaning – use of product recovery systems – containment – used oil – ASTs.)

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
PO.1.3. Facilities will meet regulatory requirements issued since the finalization of this handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).	Determine if any new regulations concerning POLs have been issued since the finalization of this handbook. Verify that the facility is in compliance with newly issued regulations.
PO.1.4. FWS facilities should report all notices of violation (NOVs) to the Region and Environmental and Facility Compliance (EFC) (MP) **[Revised June 1998].**	Determine if the facility has received an NOV relating to petroleum management. Verify that the NOV was reported to the Region and the EFC.
PO.1.5. FWS facilities should provide secondary containment is certain circumstances when an SPCC plan is not required (MP). **[Added July 1999].**	Verify that facilities provide secondary containment, when an SPCC is not required, for tanks (under 660 gal) and/or containers that are in close proximity to environmentally sensitive areas such as brooks, rivers, wetlands, or marsh areas. (NOTE: See PO.5 for SPCC plan requirements.)

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
PO.5 **SPILL PLANS**	
PO.5.1. Facilities that store, transport, or dispense petroleum products are required to prepare an SPCC plan (40 CFR 112.1(d) and 112.3).	Verify that the facility has an SPCC plan. (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if either of the following are met (40 CFR 112.1(d)(2)): – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT – the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.) (NOTE: This applies to onshore and offshore facilities, including onshore and offshore mobile or portable facilities, such as onshore drilling or workover rigs, barge mounted offshore drilling or workover rigs, and portable fueling facilities.)
PO.5.2. The SPCC plan is required to contain specific information (40 CFR 112.1(d) and 112.7).	Determine if the SPCC plan has been prepared and reviewed for the following: – Regional approval – spill reporting procedures – prespill planning for major potential spill areas – spill containment and cleanup equipment/facilities – oil spill contingency plan – training procedures – spill response exercises – plan review and update procedures – security measures (i.e., lighting and fencing) – inspection procedures – tank integrity testing procedures.

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**

	(NOTE: The regulations does allow for some variance of the contents of the plan. But if a suggested topic is not included in the plan, the reason for exclusion must be documented.)
	
	Verify that the SPCC plan contains:
	
	– general information about the facility including:
	  – name
	  – type of function
	  – location of facility drainage patterns
	  – location maps
	– name and title of designated coordinator
	– inventory of all storage, handling, and transfer facilities that could produce a significant spill. For each listing include:
	  – prediction of direction and rate of flow
	  – total quality of oil that could be spilled as a result of major failure.
	
	(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112.1 if either of the following are met:
	– the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:
	  – onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines
	  – equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT
	– the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria:
	  – the underground buried storage capacity of the facility is 42,000 gal or less of oil
	  – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.)

PO.5.3. Each SPCC plan must be reviewed	Verify that the SPCC plan has been reviewed at least once every 3 yr.

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
at least once every 3 yr (40 CFR 112.1(d) and 112.5(b)).	(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if either of the following are met: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT – the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.)
PO.5.4. The SPCC plan must be reviewed and/or amended under specific circumstances (40 CFR 112.1(d), 112.4, and 112.5(a)).	Verify that the plan was amended within 6 mo if there was a material change in facility design, construction, operations, or maintenance that alters the potential for an oil spill. Verify that the plan was sent to the Regional Administrator within 60 days for review if the facility: – discharged oil of more than 1000 gal into or upon navigable waters in a single spill even – discharged oil in harmful quantities into or upon navigable waters in two reportable spill events within any 12-mo period. Verify that amendments specified by the Regional Administrator become part of the plan within 30 days, or by the Regional Administrator specified dead line, and are implemented within 6 mo. (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if either of the following are met: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
	authority of the DOT – the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.)
PO.5.5. Each SPCC plan and any amendments must be certified by a registered professional engineer and the plan and each amendment must be prepared according to sound engineering practices (40 CFR 112.1(d), 112.3(d), and 112.5(c)).	Verify that the SPCC plan has been certified. (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if either of the following are met: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT – the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.)
PO.5.6. Each SPCC plan should be approved by the Assistant Regional Director (ARD) (MP) **[Revised June 1998].**	Verify that the plan has been approved by the ARD.
PO.5.7. A copy of the SPCC plan is required to be available at sites	Verify that a copy of the SPCC is available at facilities that have personnel onsite at least 8 h/day.

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that are normally attended at least 8 h/day where there is a potential for a discharge (40 CFR 112.1(d) and 112.3(e)).	(NOTE: If personnel is not onsite for 8 h/day, the plan may be kept at the nearest field office and the plan should be made available to the Regional Administrator.) (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if either of the following are met: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT – the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.)
PO.5.8. All facility personnel involved with the management and handling of oil and hazardous substances must take part in periodic training in spill prevention and response (40 CFR 112.1(d) and 112.7(e)(10)).	Verify that proper training has been conducted by reviewing training records and interviewing the staff. Verify that training addresses the procedures to follow when a spill occurs, such as: – notification – containment – safety practices. (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if either of the following are met: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT

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	– the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.)

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PO.15 **DISCHARGES/SPILLS**	
PO.15.1. Discharges of oil into or upon the navigable waters of the United States or adjoining shorelines or into or upon the waters of the contiguous zone or into areas that may affect natural resources belonging to, or under the exclusive management authority of the United States must be reported (40 CFR 110.2. 110.3, 110.5, and 110.6).	Determine if the facility has had any discharges of oils. (NOTE: Discharges of oil are defined as those which violate applicable water quality standards or cause a film or a sheen upon or discoloration of the surface of the water or adjoining shoreline or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shores.) Verify that the National Response Center (NRC) was notified immediately after discovery of a discharge as defined in the above NOTE. (NOTE: If direct reporting to the NRC is not practicable, reports may be made to the Coast Guard or USEPA predesignated OSC.) (NOTE: The following discharges of oil are not considered harmful: – discharges from a properly functioning vessel engine and any discharges of such oil accumulated in the bilges of a vessel discharged in compliance with MARPOL 73/78, Annex I – other discharges permitted under MARPOL 73/78, Annex I – any discharge of oil explicitly permitted by the Administrator in connection with research, demonstration projects, or studies relating to the prevention, control, or abatement of oil pollution.)
PO.15.2. Facilities are not allowed to add dispersants or emulsifiers to oils that are discharged (40 CFR 110.4).	Verify that facilities do not add dispersants or emulsifiers to discharges.

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POL STORAGE AREAS
 	
PO.20
General
 	
PO.20.1. Specific provisions are required to be implemented to prevent discharged petroleum products from reaching navigable water courses (40 CFR 112.7(c) and 112.7(d)) **[Revised January 1999].**
	(NOTE: For requirements pertaining to containment areas surrounding ASTs, see category PO.40.)
	
	(NOTE: Water is of special concern during fueling of boats on the water and repair, maintenance, and replacement of powerhouse and water control structures.)
	
	Verify that at onshore sites one of the following provisions is implemented:
	
	– the following prevention systems or an equivalent are used: :
	  – absorbent material
	  – dikes, berms, or retaining walls sufficiently impervious to contain spilled oil
	  – curbing devices
	  – culverting gutters or other drainage systems
	  – weirs, booms, or other barriers
	  – spill diversion ponds
	  – retention ponds.
	– when prevention system or equivalents are not practicable, this impracticability is clearly demonstrated and the following provided:
	  – a strong oil spill contingency plan
	  – a written commitment of manpower, equipment, and materials required to expeditiously control and remove any harmful quantity of oil discharged.
	
	Verify that at offshore sites (see definitions), one of the following provisions is implemented:
	
	– one of the following, or an equivalent, is available:
	  – curbing
	  – drip pans
	  – sumps
	  – collection systems
	– when prevention system or equivalents are not practicable, this impracticability is clearly demonstrated and the following provided:
	  – a strong oil spill contingency plan
	  – a written commitment of manpower, equipment, and materials required to expeditiously control and remove any harmful quantity of oil discharged.

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	Verify the following for spill equipment in each oil storage area: – adequacy of material types and quantity – accessibility of storage locations – condition of equipment. (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore sites which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation-related onshore and offshore sites that are subject to the authority of the DOT – the facility that although otherwise subject to USEPA jurisdiction, meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal (40 CFR 112.1(d)(2)).)
PO.20.2. Drainage of rainwater from diked areas must be controlled by a valve which is closed when not in active use/attended (40 CFR 112.1(d), 112.7(e)(1) and 112.7 (e)(2)(iii)).	Verify that valves are closed when not in use by inspecting drainage valves at diked areas. Verify that drainage valves are attended when opened to drain diked/bermed area by interviewing personnel. Determine if operating personnel understand the meaning of a harmful discharge as described in 40 CFR 110.6. Verify that records are kept of when the dike is drained. Inspect records for any drainage water which was inspected to determine if it would represent a harmful discharge. (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if either of the following are met: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines

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	– equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT – the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.)
PO.20.3. Drainage water which is determined to contain petroleum products in harmful quantities must be treated prior to discharge to meet applicable water quality standards (40 CFR 112.1(d) and 112.7 (e)(2)).	Determine if discharges containing harmful quantities of petroleum products were properly treated, recovered, or disposed and reported by interviewing onsite personnel. (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if either of the following are met: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT – the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.)

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
PO.40 **ABOVEGROUND STORAGE TANKS**	
PO.40.1. Specific provisions are required to be implemented to prevent petroleum product discharges from bulk storage tanks (over 660 gal) from reaching navigable water courses (40 CFR 112.1(d), 112.7(d), and 112.7(e)(2)(ii)) **[Revised January 1999].**	Verify that adequate containment is provided for bulk storage tanks in the storage area and at remote tanks by looking for signs of cracks, erosion, animal burrows, and vegetation growth. Verify that diked areas are impervious enough to contain spilled oil. (NOTE: Dikes, containment curbs, and pits are commonly employed for this purpose, but they may not always be appropriate. An alternative system could consist of a complete drainage trench enclosure arranged so that a spill could terminate and be safely contained in an in-plant catchbasin or holding pond.) (NOTE: When it is determined that the installation of the types of equipment or structures recommended at onshore or offshore facilities to prevent discharged oil from reaching the navigable waters is not practicable, this impracticability should be clearly demonstrated and the following provided: a strong oil spill contingency plan a written commitment of manpower, equipment, and materials required to expeditiously control and remove any harmful quantity of oil discharged.) (NOTE: Facilities are exempt from the provisions outlined in 40 CFR 112 if: the installation/CW facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: onshore and offshore sites which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines equipment or operations of vessels or transportation related onshore and offshore sites which are subject to the authority of the DOT the installation/CW facility which, although otherwise subject to USEPA jurisdiction, meets both of the following criteria are met: the underground buried storage capacity of the installation/CW facility is 42,000 gal or less of oil the storage capacity which is not buried at the installation/CW facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.)
PO.40.2. Drainage of	Verify that valves are closed when not in use by inspecting drainage

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rainwater from diked areas must be controlled by a valve which is closed when not in active use/attended (40 CFR 112.1(d), 112.7(e)(1), and 112.7(e)(2)(iii)).	valves at diked areas. Verify that drainage valves are attended when opened to drain diked/bermed area by interviewing personnel. Determine if operating personnel understand the meaning of a harmful discharge as described in 40 CFR 110.6. Verify that records are kept of when the dike is drained. Inspect records for any drainage water which was inspected to determine if it would represent a harmful discharge. (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if either of the following are met: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT – the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.)
PO.40.3. Drainage water which is determined to contain petroleum products in harmful quantities must be treated prior to discharge to meet applicable water quality standards (40 CFR 112.1(d) and 112.7 (e)(2)).	Determine if discharges containing harmful quantities of petroleum products were properly treated, recovered, or disposed and reported by interviewing onsite personnel. (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if either of the following are met: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the

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	authority of the DOT – the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.)
PO.40.4. ASTs are required to undergo periodic integrity testing (40 CFR 112.1(d) and 112.7(e)(2)(vi)).	Verify that periodic leak tests have been conducted (a decrease in converted fuel volume equal to or greater than 1/4 in. constitutes a suspected leak) and check the results of these tests. Determine if leaking tanks have been repaired or replaced. (NOTE: Periodic testing should take tank design into account and involve such techniques as hydrostatic testing, visual inspection, or a system of non destructive shell thickness testing.) (NOTE: This does not allow for all possible testing options.) Verify that a written log of integrity testing has been maintained. (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if either of the following are met: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT – the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.)
PO.40.5. Onshore mobile or portable oil	Verify that onshore mobile or portable oil storage tanks are positioned to prevent spilled oil from reaching navigable waters.

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storage tanks are required to meet specific structural and/or location requirements (40 CFR 112.7(e)(2)(xi)) **[Added April 1999].**	Verify that a secondary means of containment, such as dikes or catchment basins, is furnished for the largest single compartment or tank. Verify that onshore mobile or portable oil storage tanks are located where they will not be subject to periodic flooding or washout. (NOTE: Federal facilities are exempt from the requirements outlined in 40 CFR 112 if: the Federal facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: onshore and offshore sites which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines equipment or operations of vessels or transportation related onshore and offshore sites which are subject to the authority of the DOT the Federal facility which, although otherwise subject to USEPA jurisdiction, meets both of the following criteria: the underground buried storage capacity of the Federal facility is 42,000 gal or less of oil the storage capacity which is not buried at the Federal facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal (40 CFR 112.1(d)(2)).)

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PO.45 **PIPELINES** **PO.45.1.** Buried piping at a transfer facility, pumping station, or in-plant processing facility is required to have a protective wrapping and coating and is required to be cathodically protected if soil conditions warrant (40 CFR 112.1(d) and 112.7(e)(3)(i)).	Verify that buried fuel piping is properly protected from corrosion by examining records and interviewing personnel. Verify that methods are appropriate and correctly applied if cathodic protection is used. Verify that detected leaks and failures are being reported. (NOTE: Cathodic protection systems must be routinely monitored.) (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if either of the following are met: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT – the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.)

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PO.45.2. All above and belowground fuel piping systems at transfer facilities, pumping stations, and in-plant processing facilities must be regularly examined and any suspected leaks investigated immediately (40 CFR 112.1(d) and 112.7(e)(3)(iv)).	Verify that regular inspections have been conducted by examining records and interviewing personnel. Verify that aboveground general condition of items, such as flange joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces have been assessed. Verify that confirmed leaks have been reported and leaking pipes repaired or replaced. (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if either of the following are met: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT – the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.)
PO.45.3. Offsite pipe lines should be inspected regularly (MP).	Determine if inspections are performed by examining records. Verify that detected leaks and failures have been reported and leaking pipes repaired or replaced by interviewing personnel.
PO.45.4. In specific instances of failure in a pipeline for hazardous liquids, a report must be submitted (49 CFR 195.1, 195.50, and 195.54) **[Revised July 1999]**.	Verify that, when there is a release of hazardous liquid or CO_2 that results in the following, an accident report is submitted to Department of Transportation (DOT) within 30 days: – explosion or fire not intentionally set by the operator – loss of 50 or more barrels (bbl) (8 or more m^3) of hazardous liquid or CO_2 – escape to the atmosphere of more than 5 bbl (0.8 m^3) a day of highly volatile liquids – death of any person – bodily harm resulting in:

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	– loss of consciousness – necessity to carry the person from the scene – necessity for medical treatment – disability which prevents the discharge of normal duties or pursuit of normal activities – estimated property damage to the property of the operator of others or both, exceeding $5000. (NOTE: This requirement does not apply to the transportation of: – a hazardous liquid that is transported in a gaseous state – a hazardous liquid through a pipeline by gravity – a hazardous liquid through pipelines that operate at a stress level of 20 percent or less of the specified minimum yield strength of the line pipe – petroleum in onshore gathering lines in rural areas except gathering lines in the inlets of the Gulf of Mexico – a hazardous liquid or CO_2 in offshore pipelines which are located upstream from the outlet flange of each facility on the Outer Continental Shelf where hydrocarbons or CO_2 are produced or where produced hydrocarbons or CO_2 are first separated, dehydrated, or otherwise processed, whichever facility is further downstream – a hazardous liquid or CO_2 through onshore production, refining, or manufacturing facilities, storage or in plant piping systems associated with such facilities – a hazardous liquid or carbon dioxide by vessel, aircraft, tank truck, tank car, or other vehicle or terminal facilities used exclusively to transport hazardous liquids or CO_2 between such modes of transportation – CO_2 downstream from a point in the vicinity of the well site at which CO_2 is delivered to a production facility.)
PO.45.5. Under specific circumstances, if there is a release of a hazardous liquid or CO_2 transported in a pipeline, telephone notification must be made as soon as possible after discovery of the release (49 CFR 195.1 and 195.52).	Verify that telephone notification is made as soon as possible of any failure that: – caused a death or a personal injury requiring hospitalization – resulted in either a fire or explosion not intentionally set by the operator – caused estimated damage to the property of the operator or other or both, exceeding $5000 – resulted in pollution of any stream, river, lake, reservoir, or other similar body of water that violated applicable water quality standards, caused a discoloration of the surface of the water or adjoining shoreline, or deposited a sludge or emulsion beneath the surface of the water or upon adjoining shoreline

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	– is significant in the judgment of the operator even though it did not meet any of the above criteria. (NOTE: Telephone reports are to be made to 1-800-424-8802.) (NOTE: This requirement does not apply to the transportation of: – a hazardous liquid that is transported in a gaseous state – a hazardous liquid through a pipeline by gravity – a hazardous liquid through pipelines that operate at a stress level of 20 percent or less of the specified minimum yield strength of the line pipe – petroleum in onshore gathering lines in rural areas except gathering lines in the inlets of the Gulf of Mexico – a hazardous liquid or CO_2 in offshore pipelines which are located upstream from the outlet flange of each facility on the Outer Continental Shelf where hydrocarbons or CO_2 are produced or where produced hydrocarbons or CO_2 are first separated, dehydrated, or otherwise processed, whichever facility is further downstream – a hazardous liquid or CO_2 through onshore production, refining, or manufacturing facilities, storage or in plant piping systems associated with such facilities – a hazardous liquid or CO_2 by vessel, aircraft, tank truck, tank car or other vehicle or terminal facilities used exclusively to transport hazardous liquids or CO_2 between such modes of transportation – CO_2 downstream from a point in the vicinity of the well site at which CO_2 is delivered to a production facility.)

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PO.45.6. Facilities with onshore oil pipelines that, because of location, could reasonably be expected to cause substantial harm or significant and substantial harm to the environment by discharging oil into or on any navigable waters of the United States, or adjoining shorelines, are required to prepare a response plan (49 CFR 194.3 and 194.101 through 194.107).	Verify that the response plan includes: – a statement indicating which sections in a response zone can be expected to cause significant and substantial harm to the environment if there is a discharge of oil into or on the navigable water or adjoining shorelines – indications of the worst case discharge – immediate notification procedures – spill detection and mitigation procedures – the name address and phone number of an oil spill response organization – response activities and response resources – training procedures – equipment testing – schedules for drills – plan updating procedures – an appendix for each response zone indicating all the above general information in a way that is tailored to that response zone. Verify that the response plan is in English and if necessary, any other language understood by personnel responsible for carrying out the plan. (NOTE: Significant and substantial harm can be expected if the line is greater than 6 5/8 in. in outside nominal diameter, greater than 10 mi in length and the line section: – has experienced a release greater than 1000 bbl in the previous 5 yr – has experienced two or more reportable releases in the previous 5 yr – contains any electric resistance welded pipe, manufactured prior to 1970, operated at maximum operating pressure that corresponds to a stress level greater than 50 percent of the specified minimum yield strength of the pipe – is located within a 5 mi radius of potentially affected public drinking water intakes and could reasonably be expected to reach the intake – is located within 1 mi radius of potentially affected environmentally sensitive areas, and could reasonably be expected to reach these areas.) (NOTE: The requirement to submit a response plan is effective 18 February 1993. After 18 August 1993, the onshore pipeline must be operated according to the details outlined in the response plan.)

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	(NOTE: A response plan is not required for the following facilities: – a pipeline that is 6 5/8 in. or less in outside nominal diameter and is 10 mi or less in length, and all the following conditions apply: – the pipeline has not experienced a release greater than 1000 bbl within the previous 5 yr – the pipeline has not experienced at least two reportable releases within the previous 5 yr – the pipeline contains any electric resistance welded pipe, manufactured prior to 1970, does not operate at a maximum operating pressure that corresponds to a stress level greater than 50 percent of the specified minimum yield strength of the pipe – the pipeline is not in proximity to navigable waters, public drinking water intakes, or environmentally sensitive areas – a line section that is greater than 6 5/8 in. in outside nominal diameter and is greater than 10 mi in length, where the operator determines that it is unlikely that the worst case discharges from any point on the line section would adversely affect, within 12 h after the start of discharge, any navigable waters, public drinking water intakes, or environmentally sensitive areas – a line section that is 6 5/8 in. or less in outside nominal diameter and is 10 mi or less in length, where the operator determines that it is unlikely that the worst case discharge from any point on the line section would adversely affect, within 4 h after the initiation of the discharge, any navigable waters, public drinking water intakes, or environmentally sensitive areas.)
PO.45.7. Copies of the response plan are required to be submitted to the DOT RSPA (49 CFR 194.119(a) through 194.119(d)).	Verify that two copies were submitted to the following address: Pipelines Response Plans Office Research and Special Programs Administration Department of Transportation 400 Seventh St. SW Washington D.C. 20590-0001. Verify that the RSPA approved the response plan.

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PO.45.8. If RSPA does not approve a response plan for a pipeline identified as expected to cause significant and substantial harm to the environment, the operator must submit certification to the RSPA by 18 July 1993 that the operator has obtained, through contract or other means, the necessary personnel and equipment to respond to a worst case discharge or a substantial threat of a discharge (49 CFR 194.119(e)).	Determine if the facility has an approved response plan. Verify that, if there is not an approved response plan, the necessary certification has been submitted.
PO.45.9. Copies of the response plan are required to be kept at specific locations (49 CFR 194.111).	Verify that a copy of the complete response plan is at the operator's head quarters and a copy is provided to each responsible individual. Verify that a copy of the core portion of the plan and relevant response zone appendices for each line section whose pressure may be affected by the operation of a particular pump station is provided at the pump station. Verify that a copy of the core portion of the plan and relevant response zone appendices is kept at locations where response activities might be conducted.
PO.45.10. Training is required for the implementation of the response plan (49 CFR 194.117).	Verify that training is conducted such that all personnel know: – their responsibilities under the plan – the names, addresses, and procedures for contacting the operator on a 24-h basis and an qualified individual. Verify that reporting personnel know: – the content of the information summary – the toll free number of the NRC

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
	– the notification process. Verify that personnel engaged in response activities know: – the characteristics and hazards of oil discharged – the conditions that are likely to worsen emergencies and appropriate corrective actions – the steps needed to control any accidental discharge of oil and to minimize the potential for fire, explosion, toxicity, or environmental damage – the proper firefighting procedures and use of equipment, fire suits, and breathing apparatus. Verify that training records exist for each individual that has been trained, specifically records for: – operator personnel are at the operators headquarters – personnel engaged in response are maintained as determined by the operator. (NOTE: This training does not take the place of emergency response training requirements as found in 29 CFR 1910.120.)
PO.45.11. Pipeline response plans are required to be reviewed every 3 yr from the date of submission and modified to address new or different operating conditions or information (49 CFR 194.121).	Verify that the plan is reviewed every 3 yr.

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
PO.55 **POL LOADING AND UNLOADING** **PO.55.1.** Onshore tank car and tank truck loading/unloading racks are required to meet specific structural standards (40 CFR 112.1(d), 112.7(e)(4)(ii), and 112.7(e)(4)(iii)) **[Revised January 1999].**	Verify that, where rack drainage does not flow into a catchment basin or treatment facility designed to handle spills, a quick drainage system is used. Verify that any containment system is designed to hold at least the maximum capacity of any single compartment of a tank car or tank truck loaded or unloaded at the site. Verify that an interlocked warning light or physical barrier system or warning signs are provided in loading/unloading areas to prevent vehicular departure before complete disconnect of flexible or fixed transfer lines. (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if either of the following are met: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore sites which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation related onshore and offshore sites which are subject to the authority of the DOT – the facility, which although otherwise subject to USEPA jurisdiction, meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.) (NOTE: This requirement applies to onshore tank car and tank truck loading/unloading racks, not an individual UST at a service station.)

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
PO.55.2. Specific operational procedures are required to be performed at facility tank car and tank truck loading/ unloading sites (40 CFR 112.1(d) and 112.7(e)(iv)).	Verify that, before filling and departure of any tank car or tank truck, the lowermost drain and all outlets of the vehicle are closely examined for leakage and if necessary tightened, adjusted, or replaced to prevent leakage while in transit. (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if either of the following are met: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore sites which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation related onshore and offshore sites which are subject to the authority of the DOT – the facility, which although otherwise subject to USEPA jurisdiction meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal.)

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
USED OIL **PO.60** **General** **PO.60.1.** Depending on the constituents of the used oil (see Appendix 6-1) facilities are required to handle used oil as a hazardous waste or according to specific used oil requirements (40 CFR 279.10).	Determine which types of the used oils listed in Appendix 6-1 are generated at the facility. Verify that used oil is handled according to its classification as one of the following: – a hazardous waste – used oil that falls under the requirements of 40 CFR 279 (see checklist items in categories PO.60 through PO.90) – used oil that is not subject to the requirements of 40 CFR 279 and neither is it a hazardous waste unless testing indicates it does contain hazardous constituents.

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
USED OIL **PO.65** **Generators**	(NOTE: The requirements for used oil generators do not apply to the following: – household DIY used oil generators – vessels at sea or at port (in these cases generation occurs when it is transported ashore) – mixtures of used oil and diesel fuel mixed by the generators for use in the generators own vehicles – farmers who generate an average of 25 gal/mo or less of used oil from vehicles or machinery used on the farm in a calendar year.) (NOTE: In relation to used oil coming ashore from vessels, the owner or operator of the vessel and the person removing or accepting used oil from the vessel are co-generators of the used oil and are both responsible for managing the waste as used oil once it is ashore.)
PO.65.1. Containers and tanks used to store used oil at used oil generators must be in good condition and not leaking (40 CFR 279.22(b)).	Verify that containers and tanks are not leaking, bulging, rusting, damaged, or dented. Verify that used oil is transferred to a new container or managed in another appropriate manner when necessary.
PO.65.2. Containers of used oil at used oil generators should be man aged in accordance with good management practices (MP).	Inspect containers and storage areas to determine the following: – containers are not stored more than two high and have pallets between them – at least 3 ft of aisle space is provided between rows of containers.
PO.65.3. Containers and ASTs used for storage and fill pipes for transferring used oil into USTs are required to be marked or labeled USED OIL (40 CFR 279.22(c)).	Verify that containers and ASTs and fill pipes for USTs are labeled or marked USED OIL. (NOTE: USTs used to store used oil are required to meet the standards outlined in 40 CFR 280.)
PO.65.4. Used oil generators that detect	Verify that, when a release is detected, the following is done:

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
a release (other than a UST release) after the effective date of the recycled used oil management program in effect in the State in which the release is located must meet specific requirements (40 CFR 279.22(d)) **[Revised June 1998].**	– stop the release – contain the released used oil – clean up and manage properly the released used oil and other materials – repair or replace any leaking used oil storage containers or tanks prior to returning them to service.
PO.65.5. Generators are allowed to burn used oil in used oil-fired space heaters if specific parameters are met (40 CFR 279.23).	Determine if the facility operates any used oil-fired space heaters. Verify that the following parameters are met: – the heater burns only used oil that the facility generates or used oil received from household DIY used oil generators – the heater is designed to have a maximum capacity of not more than 0.5 MBtu/h – the combustion gases from the heater are vented to the ambient air.
PO.65.6. Except in specific circumstances, used oil generators must ensure that their used oil is transported only by transporters who have a USEPA identification number (40 CFR 279.24).	Determine if the facility is transporting used oil or contracting the transportation of used oil. Verify that the transporter has a USEPA identification number except when: – the generator does not transport more than 55 gal at any time, the vehicle used is owned by the generator or an employee of the generator, and the used oil is going to a used oil collection center that is permitted – the generator is transporting the used oil to an aggregation point owned and/or operated by the same generator in a vehicle owned by the generator or an employee and no more than 55 gal is transported – the used oil is reclaimed under a contractual agreement and the reclaimed oil is returned to the generator for use as lubricant, cutting oil, or coolant, and the contract (or tolling agreement) contains the following: – the type of used oil and frequency of shipments – verification that the vehicle used for transportation is owned

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	by the used oil processor/refiner – verification that reclaimed oil will be returned to the generator.
PO.65.7. Used oil generators should have documentation concerning the disposal of their used oil (MP).	Verify that regardless of whether the facility sends its used oil to an aggregation center, a recycler, a burner, or elsewhere, it has documentation of the amounts sent and the date.
PO.65.8. Used oil generators are not allowed to mix hazardous waste with used oil unless specific parameters are met (40 CFR 279.21(a)).	Verify that the facility does not mix hazardous waste with used oil unless: – the resulting mixture does not exhibit any characteristics of hazardous waste – the waste is hazardous solely because it exhibits the characteristic of ignitability and is not a listed hazardous waste.

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
USED OIL **PO.70** **Collection Centers and Aggregation Points**	
PO.70.1. DIY used oil collection centers are required to meet the same standards as used oil generators (40 CFR 279.30).	Verify that DIY used oil collection centers meet the requirements outlined in the sections titled Used Oil - Generators.
PO.70.2. Used oil collection centers are required to be licensed/ permitted and operated according to specific standards (40 CFR 279.31).	Determine if the facility operates a used oil collection center. Verify that the collection center meets the requirements for used oil generators outlined in the sections titled Used Oil - Generators. Verify that the collection center is registered/licensed/permitted/ recognized by a state/county/ municipal government to manage used oil.
PO.70.3. Used oil aggregation points are required to be operated according to the standards for used oil generators (40 CFR 279.32).	Verify that the used oil aggregation point is operated according to the standards outlined in the sections titled Used Oil - Generators.

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
USED OIL **PO.75** **Transportation**	(NOTE: These requirements concerning transportation and transfer of used oil do not apply to the following: – onsite transportation – generators who transport shipments of used oil totaling 55 gal or less from the generator to a used oil collection center – generators who transport shipments of used oil totaling 55 gal or less from the generator to a used oil aggregation point owned by the generator – transportation of used oil generated by household DIYs from the initial generator to a regulated generator, collection center, aggregation point, processor/refiner, or burner.)
PO.75.1. Transporters who put used oil in a truck that has previously transported hazardous waste without emptying and cleaning the truck are required to transport and handle the used oil as a hazardous waste (40 CFR 279.40(b) through 279.40(c)).	Verify that used oil, which is contaminated with hazardous waste, is transported as a hazardous waste according to the standards in the Hazardous Waste Management section. (NOTE: Facilities that transport used oil imported from abroad or exported outside of the United States must meet these requirements while in the boundaries of the United States.)
PO.75.2. Used oil transporters can consolidate or aggregate loads of used oil (40 CFR 279.41).	Verify that transporters conduct only incidental processing operations such as settling and water separation unless they also comply with the requirements for processors and refiners.
PO.75.3. Used oil transporters are required to have a USEPA identification number (40 CFR 279.42).	Verify that, if the facility is transporting used oil, it has a USEPA identification number.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
PO.75.4. Transporters must meet specific requirements for deliveries and shipments of used oil (40 CFR 279.43(a) through 279.43(b)).	Verify that all used oil is delivered to: – another used oil transporter if the transporter has a USEPA identification number – a used oil processing/re-refining facilities with a USEPA identification number – an off-specification used oil burner facility with a USEPA identification number – an on-specification used oil burner facility. Verify that DOT labeling, packaging, and placarding requirements are met.
PO.75.5. Transporters are required to take specific actions if there is a discharge of used oil during transportation (40 CFR 279.43(c)).	Verify that, if there is a discharge, the following are done: – notification of authorities (NRC) – containment of the discharge – submit a written report to the DOT – cleanup.
PO.75.6. Transporters are required to determine if the total halogen content of used oil being transported or stored at a transfer facility is above or below 1000 ppm (40 CFR 279.44).	Verify that the transporter determines the total halogen content of the used oil by one of the following methods: – testing the used oil – applying knowledge of halogen content of the used oil in light of the materials or processes used. Verify that records of analyses are kept for 3 yr.
PO.75.7. Used oil transporters are required to keep records for used oil shipments and deliveries (40 CFR 279.46).	Verify that the following records are kept for each shipment accepted for transport: – name and address of the generator, transporter, or processor/re-refiner who provided the used oil for transport – USEPA identification number – the quantity of oil accepted – the day of acceptance – signature of receipt.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	Verify that the following records are kept for each delivery to another used oil transporter or to a used oil burner, processor/re-refiner, or disposal facility and for export/import activities: – the name and address of the receiving facility or transporter – the USEPA identification number of the receiving facility or transporter – the quantity of used oil delivered – the date of delivery – the signature, dated upon receipt of the used oil, of a representative of the receiving facility or transporter. Verify that records are maintained for 3 yr.
PO.75.8. Transfer facilities are required to store used oil in tanks and containers that meet specific requirements (40 CFR 279.45(b) through 279.45(g)).	Verify that the tanks and containers at transfer facilities meet the requirements outlined in the section Used Oil - Generators. Verify that containers and ASTs used to store used oil have secondary containment that meets the following minimum requirements: – dikes, berms, or retaining walls – a floor that covers the entire area within the dikes, berms, or retaining walls – the system is impervious. Verify that containers and aboveground tanks are labeled with the phrase USED OIL. Verify that fill pipes used to transfer used oil into underground storage tanks at transfer facilities are labeled USED OIL.
PO.75.9. Specific steps must be followed in response to a release at a transfer facility (40 CFR 279.45(h)) **[Revised June 1998].**	(NOTE: This applies when the release is not from a UST and has occurred after the effective date of the recycled used oil management program in effect in the state in which the release is located.) Verify that the following steps are taken: – the release is stopped – the release is contained – the released used oil and other materials are cleaned up and properly managed – necessary repairs and replacements are done prior to returning containers or tanks to service.

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
USED OIL **PO.80** **Burners**	

PO.80.1. Off-specification used oil fuel may be burned for energy recovery in industrial furnaces and boilers (40 CFR 279.12(c), 279.60(a), and 279.61 (a)).	Determine if the facility burns used oil fuel for the purpose of energy recovery.
	
	Verify that off-specification used oil fuel is only burned for energy recovery in one of the following:
	
	– an industrial furnace
	– a boiler that is identified as one of the following:
	  – industrial boilers that are located on the site of a facility engaged in a manufacturing process where substances are transformed into new products by mechanical or chemical processes
	  – utility boilers used to produce electric power steam, heated or cooled air, or other gases or fluids for sale
	  – used oil-fired space heaters
	– hazardous waste incinerators.
	
	(NOTE: The following are exempt from meeting these requirements:
	– the burning of used oil by a generator in an onsite space heater
	– the burning of used oil by a processor/re-refiner for purposes of processing.)

PO.80.2. Used oil burners are required to have a USEPA identification number (40 CFR 279.60(a) and 279.62).	Verify that the facility has a USEPA identification number. (NOTE: The following are exempt from meeting these requirements: – the burning of used oil by a generator in an onsite space heater – the burning of used oil by a processor/re-refiner for purposes of processing.)
PO.80.3. Used oil burners are required to determine if used oil is a hazardous waste (40 CFR 279.60(a) and 279.63).	Verify that the used oil is either tested or the used oil burner applies their knowledge of the halogen content of the used oil in light of the materials or processes used, or using information from another source. Verify that copies of analyses are maintained for 3 yr.

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
PO.80.4. Used oil burners are required to store used oil in tanks and containers that meet specific requirements (40 CFR 279.60(a) and 279.64(a) through 279.64(f)).	Verify that the tanks and containers at used oil burners meet the requirements outlined in the section titled Used Oil - Generators. Verify that containers and ASTs used to store used oil have secondary containment that meets the following minimum requirements: – dikes, berms, or retaining walls – a floor that covers the entire area within the dikes, berms, or retaining walls – the system is impervious. Verify that containers and aboveground tanks are labeled with the phrase USED OIL. Verify that fill pipes used to transfer used oil into underground storage tanks at used oil burners are labeled USED OIL. (NOTE: The following are exempt from meeting these requirements: – the burning of used oil by a generator in an onsite space heater – the burning of used oil by a processor/re-refiner for purposes of processing.)
PO.80.5. Specific steps must be followed in response to a release at a used oil burner facility (40 CFR 279.60(a) and 279.64(g)) **[Revised June 1998].**	(NOTE: This applies when the release is not from a UST and has occurred after the effective date of the recycled used oil management program in effect in the state in which the release is located.) Verify that the following steps are taken: – the release is stopped – the release is contained – the released used oil and other materials are cleaned up and properly managed – necessary repairs and replacements are done on containers or tanks prior to returning them to service. (NOTE: The following are exempt from meeting these requirements: – the burning of used oil by a generator in an onsite space heater – the burning of used oil by a processor/re-refiner for purposes of processing.)

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
PO.80.6. Used oil burners are required to keep a record of each used oil shipment accepted for burning (40 CFR 279.60(a) and 279.65).	Verify that some form of records are kept that documents the following: – the name and address of the transporter who delivered the used oil – the name and address of the generator or processor or re-refiner from whom the used oil was sent to the burner – the USEPA identification numbers of the transporter or, if applicable, the generator, processor/re-refiner – the quantity of used oil accepted – the date of acceptance. Verify that records are maintained for at least 3 yr. (NOTE: The following are exempt from meeting these requirements: – the burning of used oil by a generator in an onsite space heater – the burning of used oil by a processor/re-refiner for purposes of processing.)
PO.80.7. Before a burner can accept the first shipment of off-specification used oil fuel from a generator, transporter, or processor/re-refiner, the burner must provide a one-time written notice (40 CFR 279.60(a) and 279.66).	Verify that the burner issued a notice to the USEPA stating the location and description of the activity and certifying that the used oil will only be burned in an industrial furnace or boiler. Verify that the certification is maintained for 3 yr from the date of the last shipment received. (NOTE: The following are exempt from meeting these requirements: – the burning of used oil by a generator in an onsite space heater – the burning of used oil by a processor/re-refiner for purposes of processing.)

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
USED OIL **PO.85** **Marketing**	
PO.85.1. Used oil fuel marketers may only initiate a shipment of off- specification used oil to a used oil burner who has a USEPA identification number and burns the used oil in an industrial furnace or boiler (40 CFR 279.70(b) and 279.71).	Determine if the facility is marketing off-specification used fuel oil. Verify that it is going to an appropriate used oil burner. (NOTE: These requirements do not apply to the following: – persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification – used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their facility to a used oil burner.)
PO.85.2. Generators, transporters, processor/re-refiners, or burners must determine if the fuel oil is off or on-specification (40 CFR 279.70(b) and 279.72).	Verify that a determination as to whether the used oil fuel is off or on-specification is made by analyses or obtaining copies of other analyses. Verify that records of analyses are maintained for 3 yr. (NOTE: These requirements do not apply to the following: – persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification – used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their facility to a used oil burner.)
PO.85.3. Used oil fuel marketers are required to have a USEPA identification number (40 CFR 279.70(b) and 279.73).	Verify that the facility has a USEPA identification number. (NOTE: These requirements do not apply to the following: – persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification – used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their facility to a used oil burner.)
PO.85.4. Any used oil	Verify that records containing the following information are kept of each

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
marketer that directs a shipment of used oil to a burner is required to keep specific records (40 CFR 279.70(b) and 279.74) **[Revised June 1998].**	shipment of off-specification oil: – the name and address of the transporter who delivers the used oil to the burner – the name and address of the burner who will receive the used oil – the USEPA identification number of the burner – the quantity of used oil shipped – the date of shipment. Verify that records containing the following information are kept of each shipment of on-specification oil: – the name and address of the activity receiving the shipment – the quantity of used oil fuel delivered – a cross-reference to the record of used oil analysis – the date of shipment or delivery. Verify that records are maintained for 3 yr. (NOTE: These requirements do not apply to the following: – persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification – used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their facility to a used oil burner.)
PO.85.5. Before a used oil generator, transporter, or processor/re-refiner directs the first shipment of off-specification used oil to a burner, they must obtain a one-time writ ten and signed notice from the burner (40 CFR 279.70(b) and 279.75).	Verify that notice from the burner has been received that indicates the burner notified the USEPA of the location and used oil management activities and that the burner will only burn off-specification oil in approved furnaces and boilers. Verify that a copy of the notice is kept for 3 yr from the date the last shipment of off-specification used oil is shipped to the burner.

COMPLIANCE CATEGORY: PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
USED OIL **PO.90** **Dust Suppression** **PO.90.1.** Used oil cannot be used for dust suppression unless allowed by the state (40 CFR 279.82).	Verify that used oil is not used for dust suppression at the facility.

Appendix 6-1
Used Oil Classifications
(40 CFR 279.10 and 279.11)
[Revised June 1998]

Used Oils Which Are Required To Be Handled According to the Requirements in 40 CFR 279 (40 CFR 279.10(b)(2)(ii), 279.10(b)(2)(iii), 279.10(b)(3), 279.10(c)(2), 279.10(d), 279.10(e)(2), and 279.10(i))

1. Used oil containing more than 1000 ppm of total halogens when the generator has demonstrated that the used oil does not contain hazardous waste.
2. Used metalworking oils/fluids containing chlorinated paraffins when they are recycled or disposed of and the generator has demonstrated that the used oil does not contain hazardous waste.
3. Used oils contaminated with CFCs that have been mixed with used oil from sources other
4. than refrigeration units and the generator has demonstrated that the used oil does not contain
5. hazardous waste.
6. Materials produced from used oil that are burned for energy recovery.
7. Mixtures of used oil and hazardous waste if the resultant mixture does not exhibit any characteristics of hazardous waste.
8. Mixtures of used oil and a waste that is hazardous solely because it exhibits the characteristic of ignitability and is not a listed waste.
9. Mixtures of used oil and conditionally exempt small quantity generator (CESQG) hazardous waste.
10. Mixtures of used oil and fuels or other fuel products except those marked onsite by the generator for use in the generators own vehicles if the used oil and the diesel fuel have been mixed.
11. Used oil burned for energy recovery and any fuel produced from used oil that exceeds the following allowable limits:

Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash Point	100 °×F minimum
Total halogens	4000 ppm maximum

12. Materials containing or otherwise contaminated with used oil that are burned for energy recovery. Used oil drained or removed from materials containing or otherwise contaminated with used oil.
13. Used oil at marketers or burners with any quantifiable level of PCBs (the standards in 40 CFR 761.20(a) must also be met for this type of oil).

Used Oil That is Required To Be Handled as a Hazardous Waste (40 CFR 279.10(b))

1. Mixtures of used oil and listed hazardous waste.
2. Used oil containing more than 1000 ppm total halogens
3. Used metalworking oils/fluids containing chlorinated paraffins if processed through a tolling agreement.
4. Used oil contaminated with CFCs removed from refrigeration units where the CFCs are destined for reclamation.
5. Mixtures of used oil and hazardous waste if the resultant mixture exhibits characteristics of a hazardous waste.

Used Oil Not Subject to the Requirements of 40 CFR 279, Nor is it to be Handled as a Hazardous Waste, Unless Testing Indicates Hazardous Constituents (40 CFR 279.10(c)(1), 279.10(d)(2), 279.10(e)(1), 279.10(e)(3), 279.10(e)(4), and 279.10(f) through 279.10(h))

1. Mixtures of used oil and diesel fuel mixed onsite by the generator of the used oil for use in the generator's own vehicles.
2. Materials that are reclaimed from used oil that are used beneficially and are not burned for energy recovery or used in a manner constituting disposal.
3. Materials derived from used oil that are disposed of or used in a manner constituting disposal.
4. Used oil re-refining distillation bottoms that are used as feedstock to manufacture asphalt products.
5. Wastewater discharges with de minimis quantities of used oil.
6. Used oil within a crude oil or natural gas pipeline.
7. Used oil on vessels.
8. Materials containing or otherwise contaminated with used oil from which the used oil has been properly drained or removed so that no signs of visible free-flowing remains.

SECTION 7

SOLID WASTE MANAGEMENT

U.S. ECAH, September 1999

A. Applicability

This section addresses the collection, storage, and disposal of solid waste at FWS facilities. Solid waste is considered to be nonhazardous trash, rubbish, garbage, bulky wastes, liquids, or sludges generated by any facility's operations and activities. The handling and disposal of asbestos waste materials is addressed in Section 8, Special Pollutants Management.

Recycling and resource recovery activities are also included in this section because they are considered a form of solid waste management.

B. Federal Legislation

- *Resource Conservation and Recovery Act* (RCRA) of 1976. This is the Federal law which governs the disposal of solid waste. Subtitle D of this act, as last amended in November 1984, Public Law (PL) 98-616, 42 U.S. Code (USC) 6941-6949a, establishes Federal standards and requirements for state and regional authorities respecting solid waste disposal. The objectives of this subtitle are to assist in developing and encouraging methods for the disposal of solid waste which are environmentally sound and which maximize the utilization of valuable resources recoverable from solid waste. The objectives are to be achieved through Federal technical and financial assistance to states and regional authorities for comprehensive planning (42 USC 6941).

- *The Solid Waste Disposal Act* (SWDA) of 1965, as amended. This act requires that Federal facilities comply with all Federal, state, interstate, and local requirements concerning the disposal and management of solid wastes. These requirements include permitting, licensing, and reporting.

- *The Occupational Safety and Health Act* (OSHA). The general purpose of this act is to assure, as much as possible, every individual working in the United States safe and healthful working conditions. The control of medical waste is one aspect of assuring safe and healthy working conditions.

- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*. This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires each agency ensures that sufficient funds for environmental compliance are included in the agency budget.

- EO 12873, *Federal Acquisition, Recycling, and Waste Prevention*. This EO, dated 20 October 1993, mandates waste prevention and recycling as a part of an agency's daily operations. It requires each agency to set a goal for solid waste prevention and a goal for recycling to be achieved by the year 1995. Agencies are also required to set goals for increasing the procurement of recycled and other environmentally preferable products.

- Federal regulations used to develop the checklist include:

- EO 12088, *Federal Compliance with Pollution Control Standards.*
- 7 CFR 330, *Federal Plant Pest Regulations, General, Plant Pests, Soil, Stone, Quarry Products, and Garbage.*
- 29 CFR 1910.1030, *Bloodborne Pathogens.*
- 40 CFR 243, *Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste.*
- 40 CFR 245, *Promulgation Resource Recovery Facility Guidelines.*
- 40 CFR 246, *Source Separation for Materials Recovery Guidelines.*

C. State/Local Regulations

The Federal government set minimum national standards for municipal solid waste disposal in 40 CFR 258, but state and local governments are responsible for implementing and enforcing waste programs. States are required to develop their own programs based on the Federal regulations. Most states and municipalities have already developed their own regulations governing the permitting, licensing, and operations of landfills, incinerators, and source separation/recycling programs.

States are required to incorporate revised criteria for municipal solid waste landfills (MSWLF) into their permit programs and gain approval from U.S. Environmental Protection Agency (USEPA). States that apply for and receive USEPA approval of their programs have the opportunity to provide a lot of flexibility in implementing the regulations. This flexibility allows states to take local conditions into account and gives them the authority to alter some of the requirements. Evaluators will need to determine if a state has been granted approval for the 40 CFR 258 program in order to accurately audit a facility's compliance with the criteria. Many states have also instigated categories of special wastes that may not be placed in landfills or dumps, or may only be disposed of under specific circumstances.

D. FWS/DOI Manuals

- 561 FWS 6, *Compliance Requirements SWDA - Solid Waste.* This chapter, dated 12 June 1995, provides guidance for the handling and disposition of solid waste material at Service facilities.

- 561 FW 13, *Compliance Requirements, Medical Waste.* This chapter, dated 10 April 1996, provides guidance for medical waste management at Service facilities.

- 561 FW 15, *Recycling and Waste Reduction.* This chapter, dated 30 January 1992, establishes policy for the operation of a recycling and waste reduction program.

E. Key Compliance Requirements

- Storage/Collection - Facilities are required to store all solid wastes and materials separated for recycling so that it does not cause a fire, safety, or health hazard. All facilities are required to operate their collection systems in a manner to protect the health and safety of personnel associated with the operation. All collection equipment is required to have a suitable cover to prevent spillage, and be constructed, operated, and maintained adequately. All facilities are required to collect solid wastes or materials separated for recycling according to a certain schedule, and in a safe, efficient manner (40 CFR 243.200-1, 243.201-1, 243.202-1(a) through 243.202-1(c), 243.203-1, and 243.204-1).

- Solid Waste Containers - Facility personnel should be periodically informed about materials that are prohibited from disposal in solid waste receptacles (MP).

- Recycling - FWS facilities should participate in any state or local recycling programs and reduce the volume of solid waste materials at the source whenever practical. Facilities with offices of over 100 office workers are required to recover high-grade paper. Facilities at which more than 500 families reside are required to recycle newspapers. Any facility generating 10 tons or more of waste corrugated containers per month is required to segregate or collect separately for recycling or alternate energy use (40 CFR 246.200-1 and 246.202-1).

- Open Dumping - 40 CFR 257 details the criteria for determining whether or not an activity would be considered an open dump for the purposes of state solid waste management planning under RCRA. See Appendix 7-1 for a list of the criteria that a facility or practice must meet in order for it to not be considered an open dump.

- Land Disposal Site Operations Other Than An MSWLF- Facilities should place cover material over the land disposal site at the end of each operating day. Land disposal sites that accept special wastes should have approval from the responsible agency and should provide a list of the excluded items to regular users. Facilities that operate land disposal sites should operate the sites in a manner that will protect water quality and control decomposition gases and vectors. Land disposal sites should be designed and operated in an aesthetically acceptable manner, and to be designed, constructed, and operated to protect the health and safety of personnel. Land disposal site cover material should minimize fire hazards, infiltration of precipitation, odors and litter, control gas venting and vectors, discourage scavenging, and provide a pleasing appearance. Municipal solid waste and cover material should be compacted to the smallest practicable volume. The operators of land disposal sites should maintain records and monitoring data (MP).

- Land Disposal Site Closure Other Than An MSWLF - Upon closure of a site, a detailed description is required to be recorded as required by the area's land recording authority. Facilities should survey for and be aware of old disposal sites at the facility (MP).

- New Landfills Other Than MSWLFs - New landfills are required to meet certain location and design criteria, which include evaluation of hydrogeology and onsite soil characteristics, and verification of easy access to vehicles. Plans for the design, construction, and operation of new sites or modification to existing sites are required to be prepared or approved by a professional engineer (MP).

- Medical Waste - Contaminated reusable sharps and other regulated wastes are required to be placed in puncture resistant, color coded, leakproof containers, as soon as possible after use until properly reprocessed. Specimens of blood or other potentially infectious material are required to be placed in a container that prevents leakage during collection, handling, processing, storage, transport, or shipping, and specific labeling and handling requirements are to be followed (29 CFR 1910.1030(d)).

- Medical Waste Containers - All bins, cans, and other receptacles intended for reuse that have the likelihood of becoming contaminated with blood or other potentially infectious materials are required to be inspected and decontaminated on a regularly scheduled basis. Labels affixed to containers of regulated wastes, refrigerators and freezers containing blood, and other containers used to store, transport, or ship blood or other potentially infectious materials must meet specific standards, which include the biohazard symbol, and being colored a fluorescent orange with contrasting-colored lettering and symbols (29 CFR 1910.1030(d)(4)(ii)(c) and 1910.1030(g)(1)(i)).

- Medical Waste Plan - Managers at Service facilities that regularly handle, store, or disposes of medical waste is required to have a Medical Waste Management Plan (561 FW 13.5).

- Recordkeeping - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

F. Key Compliance Definitions

- *Biologicals* - preparations made from living organisms and their products, including vaccines, cultures, etc., intended for use in diagnosing, immunizing, or treating humans or animals or in research pertaining thereto (561 FW 13.3A).

- *Blood* - human blood, human blood components, and products made from human blood (29 CFR 1910.1030(a)).

- *Bottom Ash* - the solid material that remains on a hearth or falls off the grate after thermal processing is complete (40 CFR 240.101(b)).

- *Bulky Wastes* - large items of solid waste such as household appliances, furniture, large auto parts, trees, branches, stumps, and other oversize wastes which large size precludes or complicates their handling by normal solid waste collection, processing, or disposal methods (40 CFR 243.101).

- *Collection* - the act of removing solid waste (or materials which have been separated for the purpose of recycling) from a central storage point (40 CFR 243.101).

- *Commercial Solid Waste* - all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding residential and industrial wastes (40 CFR 243.101).

- *Construction and Demolition Wastes* - the waste building materials, packaging and rubble resulting from the construction, renovation, repair, and demolition operation on pavements, houses, commercial buildings, and other structures (40 CFR 243.101).

- *Contaminated* - the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface (29 CFR 1910.1030(a)).

- *Contaminated Sharps* - any contaminated object that can penetrate the skin, including but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires (29 CFR 1910.1030(a)).

- *Corrugated Container Waste* - discarded corrugated boxes (40 CFR 246.101).

- *Decontamination* - the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal (29 CFR 1910.1030(a)).

- *Design Capacity* - the weight of solid waste of a specified gross calorific value that a thermal processing facility is designed to process in 24 h of continuous operation (40 CFR 240.101(d)).

- *Fly Ash* - suspended particles, charred paper, dust, soot, and other partially oxidized matter carried in the products of combustion (40 CFR 240.101).

- *Food Waste* - the organic residues generated by the handling, storage, sale, preparation, cooking, and serving of foods, commonly called garbage (40 CFR 243.101).

- *Garbage* - in relation to solid waste coming from outside the continental United States, it is all waste material derived in whole or in part from fruits, vegetables, meats, or other plant or animal material, and other refuse of any character whatsoever that has been associated with any such material on board any means of conveyance, and including food scraps, table refuse, galley refuse, food wrappers, or packaging materials, and other waste materials from stores, food preparation areas, passengers; or crews quarters, dining rooms, or any other areas or means of conveyance. It also means meals and other food that were available for consumption by passengers and crew on an aircraft but were no consumed (7 CFR 330.400(b)).

- *High-Grade Paper* - letterhead, dry copy papers, miscellaneous business forms, stationary, typing paper, tablet sheets, and computer printout paper and cards, commonly sold as white ledger, computer printout and tab card grade by the wastepaper industry (40 CFR 246.101).

- *Industrial Solid Waste* - the solid waste generated by industrial processes and manufacturing that is not a hazardous waste (40 CFR 243.101).

- *Infectious Agent* - any organism (such as a virus or bacterium) that is capable of being communicated by invasion and multiplication in body tissues and capable of causing disease or adverse health impacts in humans or animals (561 FW 13.3D).

- *Infectious Waste* - (40 CFR 240.101):
    1. equipment, instruments, utensils, and fomites of a disposable nature from the rooms of patients who are suspected to have or have been diagnosed as having a communicable disease and must, therefore, be isolated as required by public health agencies
    2. laboratory wastes such as pathological specimens and disposable fomites (any substance that may harbor or transmit pathological organisms)
    3. surgical operating room pathological specimens and disposable fomites attendant thereto and similar disposable materials from outpatient areas and emergency rooms.

- *Institutional Solid Waste* - solid wastes generated by educational, health care, correctional and other institutional facilities (40 CFR 243.101).

- *Isolation Waste* - biological waste and discarded materials contaminated with blood, excretion, exudates, or secretions from humans who are isolated to protect others from certain highly communicable diseases, or isolated animals known to be infected with highly communicable diseases (561 FW 13.4E).

- *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.

- *Medical/Pathological Wastes* - any solid waste that is generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals. This does not include hazardous waste or household waste (40 CFR 259.10).

- *Municipal Solid Waste* - residential and commercial solid wastes generated within a community (40 CFR 240.101).

- *Municipal Solid Waste Landfill (MSWLF) Unit* - a discrete area of land or an excavation that received household waste and that is not a land application unit, surface impoundment, injection well, or waste pile. It may also receive other types of RCRA-D wastes, such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial solid waste. Such a landfill may be publicly or privately owned. An MSWLF unit may be a new MSWLF unit, an existing MSWLF unit, or a lateral expansion (40 CFR 258.2).

- *Open Burning* - burning of solid wastes in the open, such as in an open dump (40 CFR 240.101(r)).

- *Open Dump* - a land disposal site at which solid wastes are disposed of in a manner that does not protect the environment, are susceptible to open burning, and are exposed to the elements, vectors, and scavengers (40 CFR 240.101).

- *Recoverable Resource* - materials that still have useful physical, chemical, or biological properties after serving their original purpose and can, therefore, be reused or recycled for the same or other purposes (40 CFR 245.101).

- *Recycled Material* - a material that is utilized in place of a primary, raw, or virgin material in manufacturing a product (40 CFR 245.101).

- *Recycling* - the process by which recovered materials are transformed into new products (40 CFR 245.101).

- *Regulated Wastes* - liquid or semi-liquid blood or other potentially infectious materials, contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling, contaminated sharps, and pathological and microbiological wastes containing blood or other potentially infectious materials (29 CFR 1910.1030(a)).

- *Residential Solid Waste* - the wastes generated by the normal activities of households, including, but not limited to, food wastes, rubbish, ashes, and bulky wastes (40 CFR 243.101).

- *Sanitary Landfill* - a land disposal site employing an engineered method of disposing of solid wastes on land in a manner that minimizes environmental hazards by spreading the solid wastes in thin layers, compacting the solid wastes to the smallest practical volume, and applying and compacting cover material at the end of each operating day (40 CFR 240.101).

- *Separate Collection* - collection of recyclable materials which have been separated at the point of generation and keeping those materials separated from other collected solid waste in separate compartments of a single collection vehicle or through the use of separate collection vehicles (40 CFR 246.101).

- *Sludge* - the accumulated semiliquid suspension of settled solids deposited from waste- waters or other fluids in tanks or basins (40 CFR 240.101).

- *Solid Waste* - garbage, refuse, sludge, and other discarded solid materials resulting from industrial and commercial operations and from community activities. It does not include solids or dissolved materials in domestic sewage or other significant pollutants in water resources (40 CFR 240.101).

- *Source Separation* - the setting aside of recyclable materials at their point of generation by the generator (40 CFR 246.101).

- *Special Wastes* - nonhazardous solid wastes requiring handling other than that normally used for municipal solid wastes (40 CFR 240.101).

- *Transfer Station* - a station at which solid wastes are concentrated for transport to a processing facility or land disposal site. A transfer station may be fixed or mobile (40 CFR 243.101).

- *Universal Precautions* - an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens (29 CFR 1910.1030(a)).

- *Vector* - a carrier, usually an arthropod, that is capable of transmitting a pathogen from one organism to another (40 CFR 240.202).

SOLID WASTE MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

	REFER TO CHECKLIST ITEMS:
All Facilities	SW.1.1 through SW.1.5
Storage/Collection of Solid Waste	SW.10.1 through SW.10.8
Recycling	SW.25.1 through SW.25.3
Land Disposal Sites Other Than MSWLFs	
Specific Wastes	SW.30.1 through SW.30.4
Operations	SW.35.1 through SW.35.20
Closure	SW.40.1
Site Criteria for New Landfills Other Than MSWLFs	SW.45.1 through SW.45.3
Medical Waste	
Containers/Labeling/Storage Areas	SW.110.1 through SW.110.6
Documentation	SW.125.1

SOLID WASTE MANAGEMENT

Records To Review

- Record of current nonhazardous solid waste management practices
- Records of operational/closure history of all active and inactive disposal facilities
- State and Federal inspection reports
- Records of recycling practices, including the sale of materials for the purpose of recycling
- Solid waste removal contracts and inspection records

Physical Features To Inspect

- Resource recovery facilities
- Incineration and land disposal facilities (active and inactive)
- Areas where nonhazardous waste is disposed
- Construction debris areas
- Waste receptacles
- Solid waste vehicle storage and washing areas
- Compost facilities
- Transfer stations
- Recycling centers

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
SW.1 **ALL FACILITIES**	
SW.1.1. The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/ identifying information as the citation).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, interagency agreements, or equivalent state enforcement actions.
SW.1.2. FWS facilities are required to comply with state and local solid waste regulations (EO 12088, Section 1- 1).	Verify that the facility is complying with state and local solid waste requirements. Verify that the facility is operating according to permits issued by the state or local agencies. (NOTE: Issues typically regulated by state and local agencies include: – license or permit requirements for existing onsite landfills – requirements for filing a closure plan for onsite landfills specifying monitoring and inspection procedures – design and operation specifications for solid waste receptacles – disposal of solid waste offsite only at licensed or permitted facilities – design and policy procedures of thermal processing of solid waste – analysis for hazardous properties of ash residues and sludge from air pollution control devices at coal-fired facility heating plant operations before sale or disposal – handling and disposal of medical, pathological, and infectious waste – recycling requirements – disposal of household wastes – construction/demolition debris – yard waste – disposal of used tires.)
SW.1.3. Facilities will	Determine if any new regulations concerning solid waste have been

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
meet regulatory requirements issued since the finalization of this handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).	issued since the finalization of this handbook. Verify that the facility is in compliance with newly issued regulations.
SW.1.4. FWS facilities should report all NOVs to the Region and Environmental and Facility Compliance (EFC) (MP) **[Revised June 1998].**	Determine if the facility has received an NOV relating to solid waste management. Verify that the NOV was reported to the Region and the EFC.
SW.1.5. Service facilities are required to maintain a permanent onsite record copy of any contracts for waste disposal and documentation of the final place of disposal (RP, 561 FW 5.6B(4)) **[Citation Revised June 1998].**	Verify that the facility has copies of any contracts for waste disposal and documentation of the final place of disposal. (NOTE: If the waste is a hazardous waste, this should be written up under the appropriate finding in the hazardous waste checklist.)

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
SW.10 **STORAGE/COLLECTION OF SOLID WASTE**	
SW.10.1. Facilities are required to store all solid wastes and all materials separated for recycling according to specific guidelines (40 CFR 243.200-1).	(NOTE: Federal agencies, that have decided not to adopt the requirements contained in 40 CFR 243, are required to provide a report of the analysis and rationale used.) Verify that all solid wastes are stored so as not to cause a fire, health, or safety hazard. Verify that all solid waste containing food wastes are stored in covered or closed containers which are nonabsorbent, leakproof, durable, easily cleaned, and designed for safe handling. Verify that solid waste containers are of an adequate size and number to contain all waste generated between collections. Verify that bulky wastes are stored so as not to create a nuisance and to avoid the accumulation of solid waste and water in and around the bulky items. Verify that reusable containers are capable of being serviced without the collector coming into contact with the waste.
SW.10.2. All facilities are required to operate their collection systems in a manner to protect the health and safety of personnel associated with the operation (40 CFR 243.201-1).	Verify that the collection system is operated safely.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
SW.10.3. Facilities are required to maintain collection equipment according to certain standards if such equipment is considered to be operating in interstate or foreign commerce (40 CFR 243.202-1(a)).	Verify that all vehicles used for the collection and transportation of solid waste meet all applicable standards established by the Federal Government including: *Motor Carrier Safety Standards* (49 CFR 390 through 396). *Noise Emission Standards for Motor Carriers Engaged in Interstate Commerce* (40 CFR 202). *Federal Motor Vehicle Safety Standards* (49 CFR 500 through 580) (Federally owned collection equipment only).
SW.10.4. All collection equipment is required to meet specific criteria (40 CFR 243.202-1(b) and 243.202-1(d)).	Verify that all vehicles used for collection and transportation of solid wastes or materials separated for recycling are enclosed and have suitable cover to prevent spillage. Verify that equipment used in the compaction, collection, and transportation of solid waste or materials separated for recycling are constructed, operated, and maintained adequately. Verify that the following types of equipment meet that standards established by the American National Standards Institute (ANSI): – rear-loading compaction equipment – side-loading compaction equipment – front-loading compaction equipment – tilt-frame equipment – hoist-type equipment – satellite vehicles – special collection compaction equipment – stationary compaction equipment.
SW.10.5. All facilities are required to collect solid wastes or materials separated for recycling according to a certain schedule (40 CFR 243.203-1).	Verify that solid wastes, which contain food wastes, are collected at a mini mum of once during each week. Verify that bulky wastes are collected at a minimum of once every 3 mo. Verify that all wastes are collected with sufficient frequency to inhibit the propagation or attraction of vectors and the creation of nuisances.
SW.10.6. Facilities are	Verify that solid wastes or materials separated for recycling are

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
required to collect solid wastes in a safe, efficient manner (40 CFR 243.204-1).	collected in a safe, efficient manner. Verify that the collection vehicle operator immediately cleans up any spillage caused by his operations.
SW.10.7. As a MP, facility industrial shop waste receptacles should be inspected quarterly to verify that hazardous wastes are not being deposited (MP).	Verify that receptacles were inspected by reviewing records and interviewing personnel. Verify that corrective actions were taken where indicated. Verify that hazardous waste is not present in the solid waste receptacles at shops by a visual check.
SW.10.8. Service facilities are required to keep personnel informed about proper waste disposal procedures (RP, 561 FW 5.6B(11)) **[Citation Revised June 1998].**	Verify that a program exists at the facility to keep personnel informed about proper waste disposal practices.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
SW.25 **RECYCLING**	(NOTE: By calling 1-800 CLEAN-UP (253-2687) you can find out where to take paper, metal cans, glass bottles, and other materials to be recycled for any town or city in the United States.)
SW.25.1. Facilities are to participate in any state or local recycling programs and reduce the volume of solid waste materials at the source whenever practical (RP, 561 FW 15, para 15.4.) **[Citation Revised June 1998].**	Verify that a solid waste reduction program exists. Verify that recycling programs are in compliance with applicable state or local requirements. Verify that reusable or marketable materials are collected at regular intervals.
SW.25.2. Facilities with office facilities of over 100 office workers are required to recover high-grade paper (40 CFR 246.200-1).	Determine if the facility has over 100 office workers. Verify that high-grade paper is separated at the source of generation. Verify that high-grade paper is separately collected. Verify that high-grade paper is sold for recycling.
SW.25.3. Facilities should separate fluorescent bulbs for recycling or proper disposal (MP). **[Added July 1999].**	Determine in the State has specific requirements for handling fluorescent bulbs. Verify that fluorescent bulbs are separated for recycling or for proper means of disposal as a universal or hazardous waste. Verify that fluorescent bulbs are not disposed of in dumpsters or shop receptacles. (NOTE: See Hazardous Waste Management for proper disposal if recycling is not an option.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
LAND DISPOSAL SITES OTHER THAN MSWLFs **SW.30** **Specific Wastes**	(NOTE: The USEPA has deleted 40 CFR 241 in its' entirety as a part of the transfer of responsibility to the states to regulate the issues formerly addressed in 40 CFR 241. Checklist items SW.30.1 through SW.30.4 were based on 40 CFR 241. These checklist items remain in the handbook as MPs during this time of transition for those facilities located in states which have not addressed the 40 CFR 241 issues at the time of the audit.)
SW.30.1. Facilities are required to identify what wastes can and cannot be accepted at the disposal facility in conjunction with the responsible agency (MP).	Verify that the facility has specifically identified what wastes can and cannot be accepted for disposal at the site.
SW.30.2. Bulky wastes should be disposed of according to certain methods (MP).	Verify that automobile bodies, furniture, and appliances are either salvaged or crushed and pushed onto the working face near the bottom of the cell. Verify that demolition and construction debris, tree stumps, and large timbers are pushed onto the working face near the bottom of the cell.
SW.30.3. Water treatment plant sludges containing no free moisture and digested or heat treated waste water treatment plant sludges should be disposed of according to certain methods (MP).	Verify that water treatment plant sludges containing no free moisture and digested or heat treated wastewater treatment plant sludges are covered with soil or municipal solid wastes.
SW.30.4. Incinerator and air pollution control residues should be disposed of according to certain methods (MP).	Verify that incinerator and air pollution control residues are incorporated into the face and covered as necessary to prevent them from becoming airborne.

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LAND DISPOSAL SITES OTHER THAN MSWLFs **SW.35** **Operations**	(NOTE: The USEPA has deleted 40 CFR 241 in its' entirety as a part of the transfer of responsibility to the states to regulate the issues formerly addressed in 40 CFR 241. Checklist items SW.35.2 through SW.35.20 were based on 40 CFR 241. These checklist items remain in the handbook as MPs during this time of transition for those facilities located in states which have not addressed the 40 CFR 241 issues at the time of the audit.)
SW.35.1. Open dumping is prohibited at the facility (40 CFR 257.1 (a)(2)).	Verify that open dumping is not practiced at the facility. (NOTE: See Appendix 7-1 for a description of what constitutes open dumping.)
SW.35.2. Facilities should place cover material on land disposal sites at the end of each operating day (MP).	Verify that cover material is put in place daily by arriving at the site before it opens.
SW.35.3. Using information from the generation sources on the facility, the disposal facility operator, and the responsible agency are required to determine specific wastes that are excluded from disposal and identify them in plans (MP).	Verify that the disposal facility has designated what wastes are excluded from disposal at the site. Verify that the list of excluded wastes is documented in a plan.
SW.35.4. Facilities which operate land disposal sites should provide a list of excluded materials to regular users (MP).	Verify that a list of excluded materials is displayed prominently at the site entrance. Verify that a list of excluded materials is given to all regular users of the site.
SW.35.5. The location,	Verify that applicable water quality standards are met and ground and

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Fish and Wildlife Service	
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construction, and design of land disposal sites are required to meet the most stringent of applicable water quality standards and/ or be constructed, located, designed, and operated in a manner to provide adequate protection to ground and surface water used as drinking water supplies (MP).	surface water used as drinking water supplies are protected.
SW.35.6. Land disposal sites should be operated in a manner which will protect water quality (MP).	Verify that surface water course and runoff are diverted from the land disposal site. Verify that the land disposal site is constructed and graded to promote rapid surface water runoff without excessive erosion. Verify that regrading is done as necessary to avoid ponding of precipitation and to maintain cover material integrity. Verify that siltation or retention basins or other approved methods of retarding runoff are used where necessary to avoid stream siltation or flooding problems. Verify that leachate collection and treatment systems are used where necessary to protect groundwater and surface water resources. Verify that municipal solid wastes and leachate are not in contact with groundwater or surface water.
SW.35.7. Land disposal sites should operate in a manner which will protect air quality (MP).	Verify that there is no open burning of municipal solid wastes. Verify that dust control measures are initiated as necessary.
SW.35.8. Land disposal sites are required to control decomposition	Verify that land disposal sites are controlling decomposition gases.

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gases as necessary to avoid posing a hazard to occupants of adjacent property (MP).	
SW.35.9. Land disposal sites should control decomposition gases according to the following recommended procedures (MP).	Verify that decomposition gases are not allowed to migrate laterally from the land disposal site. Verify that decomposition gases do not pose an explosion or toxicity hazard.
SW.35.10. Land disposal sites are required to control vectors (MP).	Verify that conditions are maintained that are unfavorable for the harboring, feeding, and breeding of vectors.
SW.35.11. Land disposal sites are required to be designed and operated in an aesthetically acceptable manner (MP).	Verify that the disposal site is designed and operated in an aesthetically acceptable manner.
SW.35.12. For the land disposal site to be aesthetically acceptable, specific practices should be followed (MP).	Verify that blowing litter is controlled through portable litter fences or other devices. Verify that wastes that are easily moved by wind are covered as necessary to prevent their becoming airborne. Verify that onsite vegetation is cleared only as necessary. Verify that natural windbreaks are maintained. Verify that buffer strips and/or berms are used to screen the site from nearby residences and major roadways. Verify that salvage material is removed from the site frequently.
SW.35.13. Land disposal site cover material must meet certain criteria (MP).	Verify that cover material is applied as necessary to: – minimize fire hazards – minimize infiltration of precipitation

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	– minimize odors – minimize blowing litter – control gas venting – control vectors – discourage scavenging – provide a pleasing appearance.
SW.35.14. Cover material should be applied according to specific recommendations (MP).	Verify that cover material is applied daily regardless of weather. Verify that the thickness of the compacted daily cover is no less than 6 in. Verify that intermediate cover is applied on areas where additional cells are not to be constructed for extended periods of time. Verify that final cover is applied on each area as it is completed or if the area is to remain idle for over 1 yr. Verify that the surface grade promotes surface water runoff without erosion to minimize infiltration. Verify that intermediate cover is at least 1-ft thick and final cover is at least 2- ft thick.
SW.35.15. Municipal solid waste and cover material must be compacted to the smallest practicable volume (MP).	Verify that the solid waste and cover material is compacted to the smallest practicable volume.
SW.35.16. Compaction of wastes and cover materials should be done according to recommended procedures (MP).	Verify that, on an operating day, municipal solid waste handling equipment is capable of performing the following functions: – spread solid waste in layers no more than 2-ft thick while confining it to the smallest practicable area – compact the spread solid wastes to the smallest practicable volume – place, spread, and compact the cover material daily.
SW.35.17. Land disposal sites are required to be designed, constructed, and operated to protect	Verify that the health and safety of personnel are a consideration in the design, construction, and operation of the site.

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
the health and safety of personnel (MP).	
SW.35.18. Specific health and safety procedures should be followed in order to protect personnel at land disposal sites (MP).	Verify that a safety manual is available to employees. Verify that personal safety devices, such as hearing and eye protection, are provided to facility employees. Verify that equipment is provided with safety devices. Verify that provisions to extinguish fires exist. Verify that communications equipment is available onsite. Verify that scavenging is prohibited. Verify that access to the site is controlled. Verify that traffic signs or markers are provided to promote an orderly traffic pattern to and from the discharge area.
SW.35.19. Operators of land disposal sites are required to maintain records and monitoring data to be provided, upon request, to the responsible agency (MP).	Verify that required records are available. (NOTE: Recommended records and monitoring data include: – records of major operational problems, complaints, or difficulties – qualitative and quantitative evaluations of the environmental impact of the land disposal site – vector control efforts – dust and litter control efforts – quantitative measurements of the solid wastes handled – descriptions of the solid waste materials received, identified by source of materials.)
SW.35.20. Records being maintained at land disposal site should cover specific topics (MP).	Verify that records are maintained and cover at least: – major operational problems, complaints, or difficulties – results of leachate sampling and analyses – results of gas sampling and analyses – results of groundwater and surface water quality sampling and

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	analyses upstream and downstream of the site – vector control efforts – dust and litter control efforts – quantitative measurements of the solid wastes handled – description of solid waste materials received.

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
LAND DISPOSAL SITES OTHER THAN MSWLFs **SW.40** **Closure**	(NOTE: The USEPA has deleted 40 CFR 241 in its' entirety as a part of the transfer of responsibility to the states to regulate the issues formerly addressed in 40 CFR 241. Checklist item SW.40.1 was based on 40 CFR 241. These checklist items remain in the handbook as MPs during this time of transition for those facilities located in states which have not addressed the 40 CFR 241 issues at the time of the audit.)
SW.40.1. Upon closure of a site, a detailed description should be recorded with the area's land recording authority (MP).	Verify that, upon closure of a site, a detailed description is recorded with the area's land recording authority.

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
SW.45 **SITE CRITERIA FOR NEW LANDFILLS OTHER THAN MSWLFs**	(NOTE: The USEPA has deleted 40 CFR 241 in its' entirety as a part of the transfer of responsibility to the states to regulate the issues formerly addressed in 40 CFR 241. Checklist items SW.45.1 through SW.45.3 were based on 40 CFR 241. These checklist items remain in the handbook as MPs during this time of transition for those facilities located in states which have not addressed the 40 CFR 241 issues at the time of the audit.)
SW.45.1. Site selection and utilization are required to be consistent with public health and welfare, air and water quality standards, and adaptable to appropriate land-use plans (MP).	Verify that the site and utilization are consistent with public health and welfare and other necessary environmental standards.
SW.45.2. New landfills should meet certain location and design criteria (MP).	Verify that the hydrogeology of the site has been evaluated. Verify that onsite soil characteristics have been evaluated. Verify that environmental factors, climatological conditions, and socioeconomic factors have been considered in site selection. Verify that the site is easily accessible to vehicles. Verify that the site location will not attract birds and pose a hazard to low-flying aircraft.
SW.45.3. Plans for the design, construction, and operation of new sites or modifications to existing sites are required to be prepared or approved by a professional engineer (MP).	Verify that plans have been prepared or approved by a professional engineer.

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
MEDICAL WASTE **SW.110** **Containers/Labeling/ Storage Areas**	
SW.110.1. Contaminated reusable sharps are required to be placed in containers which meet specific requirements as soon as possible after use until properly reprocessed (29 CFR 1910.1030(d)(2)(viii) and 1910.1030(d)(4)(ii)(E)).	Verify that contaminated reusable sharps are placed in containers that are: – puncture resistant – labeled or color coded – leakproof on the sides and bottom. Verify that reusable sharps, that are contaminated with blood or other potentially infectious materials, are not stored or processed in a manner that required employees to reach by hand into the containers.
SW.110.2. Specimens of blood or other potentially infectious material are required to be placed in a container that prevents leakage during collection, handling, processing, storage, transport, or shipping, and specific labeling and handling requirements followed (29 CFR 1910.1030 (d)(2)(xiii)).	Verify that containers are: – labeled and color coded – closed prior to being stored, transported, or shipped. (NOTE: When the facility utilizes Universal Precautions in the handling of all specimens, the labeling/color coding of specimens is not necessary if the containers are recognizable as containing specimens.) Verify that, if outside contamination of the primary container occurs, it is placed in a second container. Verify that, if the specimens could puncture the primary container, the primary container is placed in a secondary container which is puncture resistant.
SW.110.3. Contaminated sharps are to be discarded immediately in containers meeting specific requirements (29 CFR 1910.1030 (d)(4)(iii)(A)).	Verify that contaminated sharps are placed in containers that are: – closeable – puncture resistant – leakproof on sides and bottoms – labeled or color coded. Verify that, during use, containers for contaminated sharps are:

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	– easily accessible – maintained upright throughout use – replaced routinely and not be allowed to overfill. Verify that, when the containers of contaminated sharps are being moved from the area of use, the containers: – are closed – placed in a secondary container that is closeable if leakage is possible. Verify that reusable containers are not opened, emptied, or cleaned manually or handled in any other manner that would expose employees to risk of cuts or abrasions. (NOTE: Self-sheathing needles, after use, shall be disposed of in sharps containers.)
SW.110.4. Regulated wastes other than sharps (see definitions) are required to be handled and placed in containers that meet specific standards (29 CFR 1910.1030(d)(4)(iii)(B)).	Verify that regulated wastes are placed in containers that: – are closeable – constructed to contain all contents and prevent leakage of fluids – labeled or color coded – closeable if leakage is possible – closed prior to removal. (NOTE: Regulated wastes which have been decontaminated need not be labeled or color-coded.) Verify that, if outside contamination of the regulated waste occurs, it is placed in a second container that meets the following: – are closeable – constructed to contain all contents and prevent leakage of fluids – labeled or color coded – closeable if leakage is possible.
SW.110.5. All bins, pails, cans, and similar	Verify that receptacles with the potential for contamination are regularly inspected and decontaminated.

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
receptacles intended for reuse, that have the likelihood of becoming contaminated with blood or other potentially infectious materials are required to be inspected and decontaminated on a regularly scheduled basis (29 CFR 1910.1030(d)(4)(ii)(C)).	
SW.110.6. Labels affixed to containers of regulated wastes, refrigerators and freezers containing blood or other potentially infectious materials, and other containers used to store, transport, or ship blood or other potentially infectious materials must meet specific standards (29 CFR 1910.1030(g)(1)(i)).	Verify that the labels: – include the biohazard symbol – are fluorescent orange or orange-red or predominantly so, with lettering and symbols in contrasting color – are affixed as closely as possible to the container by adhesive, string, or wire, to prevent loss or removal. (NOTE: Red bags or containers may be used as a substitute for labels.) (NOTE: The following are exempt from labeling requirements: – containers of blood, blood components, or blood products that are labeled as to their contents and have been released for transfusion or other clinical use – individual containers of blood or other potentially infectious materials that is placed in a labeled container during storage, transport, shipment, or disposal.) (NOTE: Regulated waste that has been decontaminated need not be labeled and color coded.)

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
MEDICAL WASTE **SW.125** **Documentation** **SW.125.1.** Facilities that regularly handle, store, or dispose of medical waste are required to prepare a Medical Waste Plan (RP, 561 FW 13.5A) **[Citation Revised June 1998].**	Verify that the plan include the following information: – categorization of waste streams as one of the following: – isolation waste – cultures and stocks of infectious agents and associated biologicals (examples include specimens from medical and pathology laboratories) – animal blood and blood products – pathological wastes (examples include tissues, organs, blood, and body fluids) – contaminated sharps – contaminated animal carcasses – body parts and bedding – miscellaneous laboratory waste (examples include specimen containers, slides, disposable gloves, lab coats, and aprons) – segregation methodologies – packaging methodologies – storage methodologies – transportation mechanisms.

Appendix 7-1

Open Dumping
(40 CFR 257.1 through 257.3-8)

Unless the following are met, a land disposal site is considered an open dump.

1. Facilities or practices in floodplains must not restrict the flow of the base flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste, so as to pose a hazard to human life, wildlife, or land or water resources.

2. Facilities or practices do not cause or contribute to the taking of any endangered or threatened species of plants, fish, or wildlife. Nor does it result in the destruction of or adverse modification of the critical habitat.

3. The facility does not cause a discharge of pollutants into the waters of the United States that is in violation of the requirements of the National Pollutant Discharge Elimination System (NPDES). It also does not cause a discharge of dredged materials or fill materials or cause nonpoint source pollution of waters of the United States that violated applicable legal requirements.

4. The facility or practice does not contaminate an underground drinking water source beyond the solid waste boundary or beyond a specified alternative boundary established by the state.

5. When solid waste is applied within 1 m (3 ft) of the surface of land used for the production of food chain crops the following are done:
    a. the pH of the solid waste and soil mixture is 6.5 or greater at the time of each solid waste application, except for solid waste containing cadmium at concentrations of 2 mg/kg (dry weight) or less
    b. the annual application of cadmium from solid waste does not exceed 0.5 kg/ha
    c. the cumulative application of cadmium from solid wastes does not exceed:

Soil cation exchange capacity (meq/100g)	Maximum cumulative application (kg/ha)	
	Background soil pH less than 6.5	Background soil pH more than 6.5
Less than 5	5	5
5 to 15	5	10
More than 15	5	20

d. when the background pH is less than 6.5, the cumulative application does not exceed the levels below provided the pH of the solid waste and soil mixture is adjusted to and maintained at 6.5 or greater whenever food-chain crops are grown:

Soil cation exchange capacity (meq/100g)	Maximum cumulative application (kg/ha)
less than 5	5
5 to 15	10
More than 15	20

6. When solid waste is applied within 1 m (3 ft) of the surface of land used for the production of animal feed the following are done:
   a. the pH of the solid waste and soil mixture is 6.5 or greater at the time of each solid waste application, or at the time the crop is planted, whichever occurs later, and the pH level is maintained whenever food chain crops are grown
   b. there is a facility operating plan that demonstrates how human consumption will be avoided
   c. future property owners are notified of the restrictions.

7. Solid waste containing concentrations of PCBs equal to or greater than 10 mg/kg (dry weight) is incorporated into the soil when applied to land used for producing animal feed, including pasture crops. Incorporation is not required if it is assured that the PCB content is less than 0.2 mg/kg (actual weight) in animal feed or less than 1.5 mg/kg (fat basis) in milk.

8. The onsite population of disease vectors is minimized through the periodic application of cover material or other techniques as appropriate so as to protect public health.

9. Sewage sludge that is applied or incorporated into the soil is treated by a process to significantly reduce pathogens prior to application or incorporation. Public access is controlled for at least 12 mo and grazing by animal who product are consumed by humans is prevented for at least one month.

10. Septic tank pumpings that are applied or incorporated into the soil is treated by a process to significantly reduce pathogens prior to application or incorporation unless public access is controlled for at least 12 mo and grazing by animal whose products are consumed by humans is prevented for at least 1 mo.

11. There is no open burning of residential, commercial, institutional, or industrial solid waste. (This does not apply to the infrequent burning of agricultural wastes in the field, silvicultural wastes for forest management purposes, landclearing debris, diseased trees, and debris from emergency cleanup operations and ordnance.)

12. The concentrations of explosive gases does not exceed:

a. 25 percent of the LEL for the gases in the facility structures (excluding gas control or recovery system components)
b. the LEL for the gases at the property boundary.

13. The site is not a fire hazard.

14. There is not uncontrolled public access.

15. Facilities or practices where putrescible wastes that may attract birds and which occurs within 10,000 ft (3048 m) of any airport runway used by only piston-type aircraft does not pose a bird hazard to aircraft.

(NOTE: These requirements do not apply to the following:
1. agricultural wastes, including manure and crop residues, returned to the soil as fertilizers or soil conditioners
2. overburden resulting from mining operations intended for return to the mining site
3. and application of domestic sewage or treated domestic sewage
4. location and operation of septic tanks
5. solid or dissolved materials in irrigation return flows
6. industrial discharges which are point sources subject to NPDES
7. source, special nuclear or by-product material as defined by the *Atomic Energy Act*
8. hazardous waste disposal facilities which are subject to regulation
9. disposal of solid waste by underground well injection
10. municipal solid waste landfill units
11. use or disposal of sewage sludge on the land when it is used or disposed of in accordance with 40 CFR 503.)

SECTION 8

SPECIAL POLLUTANTS MANAGEMENT

U.S. ECAH, September 1999

A. Applicability

This section is used to determine the compliance status of the management activities associated with:

1. polychlorinated biphenyls (PCBs) and in-service and out-of-service PCB Items
2. the removal of asbestos from buildings and its ultimate disposal
3. testing for potential radon exposure
4. limiting environmental noise
5. identification of lead based paint (LBP) in residences.

B. Federal Legislation

- *The Noise Control Act* of 1972. This act, Public Law (PL) 92-574 (42 U.S. Code (USC) 4901-4918), as amended:
  1. establishes a means for effective coordination of Federal research and activities in noise control
  2. authorizes the establishment of Federal noise emission standards for products distributed in commerce
  3. provides information to the public respecting the noise emission and noise reduction characteristics of such products.

  The following categories of products which produce noise are covered by this act:
  1. construction equipment
  2. transportation equipment (including recreational vehicles and related equipment)
  3. any motor or engine (including any equipment of which an engine or motor is an integral part)
  4. electrical or electronic equipment.

  The following articles are not covered by the act (42 USC 4902(3)):
  1. any aircraft, aircraft engine, propeller, or appliance
  2. any military weapons or equipment designed for combat use
  3. any rockets or equipment designed for research, experimental, or developmental work to be performed by the National Aeronautics and Space Administration (NASA)
  4. any other machinery or equipment designed for use in experimental work done by or for the Federal Government.

  The manufacturer of a product is required to give notice to the prospective user about the level of the noise the product emits, or its effectiveness in reducing noise (42 USC 4907 (b)). Such notice may not be removed from the product or its container (42 USC 4909 (4)). The manufacturer is prohibited to remove or render ineffective any device or element of design incorporated into the product to control noise (42 USC 4909(2)).

- *Aviation Safety and Noise Abatement Act* of 1979. This act, PL 96-193 (49 USC Appendix 2103, 2104), as amended, relates to airport noise. Any airport operator may submit to the Secretary of Transportation a noise exposure map. Such maps shall set forth the noncompatible uses in each area of the map, a description of the projected aircraft operations at such airport,

and the ways in which such operations will affect such a map (49 USC 2103). Any airport operator who has submitted a noise exposure map and the related information may submit to the Secretary of Transportation a noise compatibility program. This program shall include measures which the operator has taken or proposes for the reduction of existing noncompatible uses and the prevention of the introduction of noncompatible uses within the area covered by the noise exposure map submitted (49 USC Appendix 2104).

- *The Toxic Substances Control Act* (TSCA). This act, as last amended in 1986, 15 USC 2601-2671, is the Federal legislation which deals with the control of toxic substances. The act consists of three subchapters, one of which regulates the control of toxic substances, another governs asbestos hazard emergency response, and another subchapter regulates indoor radon abatement. The policy developed in TSCA on chemical substances is as follows (15 USC 2601(b)):
  1. adequate data should be developed with respect to the effect of chemical substances and mixtures on health and the environment and that the development of such data should be the responsibility of those who manufacture and those who process such chemical substances and mixtures
  2. adequate authority should exist to regulate chemical substances and mixtures which present an unreasonable risk of injury to health or the environment, and to take action regarding chemical substances and mixtures
  3. authority over chemical substances and mixtures should be exercised in such a manner as not to impede unduly or create unnecessary economic barriers to technological innovation while fulfilling the primary purpose of this act to assure that such innovation and commerce in such chemical substances and mixtures do not present an unreasonable risk of injury to health or the environment.

  Upon request by the U.S. Environmental Protection Agency (USEPA), each Federal Department and Agency is authorized to (15 USC 2625(a)):
  1. make its services, personnel, and facilities available (with or without reimbursement) to the USEPA to assist the USEPA in the administration of this act
  2. furnish the USEPA with information, data, estimates, and statistics, and allow the USEPA access to all information in its possession as the USEPA may reasonably determine to be necessary for the administration of this act.

  Under TSCA, the national long-term goal of the United States with respect to radon levels in buildings is that the air within U.S. buildings should be as free of radon as the ambient air outside of buildings (15 USC 2661). The head of each Federal Department or Agency that owns a Federal building must conduct a study for the purpose of determining the extent of radon contamination in such buildings. Such a study must include, in the case of a Federal building using a nonpublic water source (such as a well or other groundwater), radon contamination of the water. Such a study must be based on design criteria specified by the USEPA (15 USC 2669(a)(c)(e)).

  An amendment of TSCA requires the creation of regulations governing lead-based paint activities to ensure that individuals engaged in such activities are properly trained; that training programs are accredited; and that contractors engaged in such activities are certified. Within 15 USC 2688 expressly mandates Federal agency compliance with all Federal, state, interstate, and local requirements, both substantive and procedural pertaining to lead-based paint, lead-based paint activities, and lead-based paint hazards. This section also expressly waives any immunity otherwise applicable to the United States, including immunity from penalties and fines levied by the USEPA and State agencies. (15 USC 2681 though 2692) **[Revised June 1998]**.

- *The Asbestos Hazard Emergency Response Act* (AHERA) of 1986. This act, last amended in November 1990, 15 USC 2641-2656, et. al., and 20 USC 4014, et al., is the Federal legislation

governing the control and abatement of asbestos hazard present in school buildings. The purpose of this act is (15 USC 2641(b)):

1. to provide for the establishment of Federal regulations which require inspection for asbestos-containing material (ACM) and implementation of appropriate response actions with respect to ACM in the nation's schools in a safe and complete manner
2. to mandate safe and complete periodic reinspection of school buildings following response actions, where appropriate
3. to require the USEPA to conduct a study to find out the extent of the danger to human health posed by asbestos in public and commercial buildings and the means to respond to any such danger.

- *The Hazardous Materials Transportation Act.* This act was amended in 1978 to regulate the transport of asbestos materials. The regulations are contained in 49 CFR 172-177. In particular, 49 CFR 177 requires that asbestos must be loaded, handled, and unloaded in a manner that will minimize occupational exposure to airborne asbestos. Asbestos wastes that are transported for disposal at landfills or other disposal facilities must meet all applicable requirements.

- Executive Order (EO) 12088. This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities it funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

- Federal regulations used to develop the checklist include:

    - EO 12088, *Federal Compliance with Pollution Control Standards*.
    - 40 CFR 61, Subpart M, *National Emission Standards for Hazardous Air Pollutants*.
    - 40 CFR 761, *PCB Manufacturing, Processing, Distribution in Commerce and Use Prohibitions*.
    - 40 CFR 763, *Asbestos-in-Schools*.

C. State/Local Regulations

- *Noise* - State, regional, and local governmental agencies may develop zoning and planning ordinances which have the potential to effect FWS facilities and their operations. As a general rule, states tend to treat environmental noise as a source specific pollutant whose emissions will be controlled by the locally effected community.

- *PCBs* - According to the general structure of Federal regulatory programs, any state regulations must adopt the Federal regulations as a minimum set of requirements. In some cases, state regulations have been developed which regulate PCBs more stringently than the Federal program.

  State PCB regulations may provide additional regulatory requirements beyond the Federal program to address a specific concern or activity sensitive in that state. State regulations may supersede the Federal regulations in areas including the following:

  1. PCBs may be regulated as a hazardous waste
  2. PCBs may be regulated to a lower concentration. For example, regulated PCBs in one state are defined to be materials and fluids which contain PCBs at a concentration greater than 7 ppm
  3. shipments of PCBs may require manifest documents
  4. analysis may be required to quantify the PCB concentration in all PCB Items

5. additional inspections of select PCB Items and specific disposal requirements for PCBs and PCB Items may also be required
6. generators of PCBs and PCB Items may be required to obtain disposal permits.

- *Asbestos* - Many state and local governments have enacted standards more stringent than the Federal requirements concerning certification of asbestos workers and disposal of asbestos waste. If the facility is engaging in asbestos removal or disposal, contact the appropriate state and local agencies.

- *Radon* - State and local governments may enact radon control standards.

D. FWS/DOI Manuals

- 561 FW 8, *Compliance Requirements TSCA/CAA - Asbestos*. This chapter, dated 12 June 1995, provides guidance for asbestos management at Service facilities.

- 561 FW 9, *Compliance Requirements TSCA - PCB*. This chapter, dated 22 March 1996, provides guidance for PCB management at Service facilities.

- 561 FW 12, *Compliance Requirements, Radon.* This chapter provides guidance for radon management at Service facilities.

E. Key Compliance Requirements

- Personnel and PCBs - Certain regulations and practices should be followed to ensure the health of personnel who come in contact with PCBs. These include provision of protective work-clothing, shower facilities, and facilities for washing hands during shift. Airborne contamination of PCBs should be assessed and certain precautionary practices followed to protect personnel, which include the wearing of respirators if contamination is above a certain level. Certain records and practices should be maintained for employees exposed to PCBs, including medical histories and physical examinations emphasizing liver and skin condition. **[Revised October 1998].**

- PCB Equipment Marking - The following equipment is required to be marked indicating that they contain PCBs (40 CFR 761.40 and 761.45)) **[Revised October 1998]:**
    1. PCB Containers with PCBs in concentrations of greater than 50 ppm
    2. PCB Transformers (500 ppm or greater)
    3. PCB Large High-Voltage Capacitors
    4. equipment containing a PCB Transformer (500 ppm or greater) or a PCB Large High-Voltage Capacitor at the time of removal from service
    5. PCB Large Low-Voltage Capacitors at the time of removal from service
    6. electric motors using PCB coolants with a concentration of greater than 50 ppm
    7. hydraulic systems using PCB hydraulic fluid with concentrations of greater than 50 ppm
    8. heat transfer systems (other than PCB Transformers) using PCB concentrations of greater than 50 ppm
    9. PCB Article Containers containing any of the above
    10. each storage area used to store PCBs and PCB Items for disposal
    11. transport vehicles loaded with PCB Containers that contain more than 45 kg (99.4 lb) of liquid PCBs with PCBs at concentrations >/= 50 ppm or with one or more PCB Transformers with PCB concentrations of greater than 500 ppm are marked on each end and side
    12. vault doors, machinery room doors, fences, hallways, or means of access, other than a manhole or grate cover, to a PCB Transformer (500 ppm or greater).

13. voltage regulators with a PCB concentration of >/= 500 ppm (individually)
14. vault doors, machinery room doors, fences, hallways, or means of access to voltage regulators with a PCB concentration >/= 500 ppm.

- Records for PCBs - A written annual document log must be prepared by 1 July of each calendar year, covering the previous year for all facilities that use or store at any time at least 45 kg (99.4 lb) of PCBs contained in PCB Containers, or one or more PCB Transformers, or 50 or more PCB Large, High-, or Low-Voltage Capacitors. Owners and operators of PCB chemical waste landfills shall keep records on water analysis and operational records, including burial coordinates for 20 yr after disposal has ceased. Generators are required to maintain manifests and certificates of disposal (COD) for 3 yr (40 CFR 761.180(a), 761.180(d), and 761.180(f))) **[Revised October 1998]**.

- PCB Transformers - PCB Transformers with PCBs of 500 ppm or greater, that are in use or in storage for reuse, must not pose an exposure risk to food and feed and are subject to registration requirements. Railroad transformers must not contain dielectric fluid with greater than 1000 ppm PCB and must be serviced according to specific requirements. Combustible materials, including, but not limited to, paints, solvents, plastics, paper, and sawn wood, must not be stored by a PCB Transformer. PCB transformers of concentrations of 500 ppm or greater in use in or near commercial buildings are subject to certain requirements. PCB transformers are required to be properly serviced, and inspections must be performed once every 3 mo for all in-service transformers. If the transformer is found to be leaking, it must be repaired or replaced to eliminate the source of the leak. When a PCB transformer is involved in a fire, the incident must be reported immediately to the National Response Center (NRC). Mineral oil transformers which are tested and found to be contaminated with 500 ppm PCBs or greater must meet specific requirements. (40 CFR 761.30(a)(1)(ii) through 761.30(a)(1)(v), 761.30(a)(1)(vii), 761.30(a)(1)(xv), 761.30(b)(1)(iv), 761.30(b)(2)(ii), 761.30(b)(2)(iii), 761.120(a), 761.120(b), 761.120(c), 761.123(d)(2), and 761.125)) **[Revised October 1998]**.

- PCB Spills - Spills of 10 lb or more of PCBs of concentrations of 50 ppm must be reported to the USEPA regional office. Spills of greater than 1 lb must be cleaned up and reported to the USEPA regional office and the NRC. The criteria for cleanup is based on whether the spill is of high or low concentration of PCBs (40 CFR 761.120, 761,123, and 761.125)) **[Revised October 1998]**.

- PCB Items - The use of PCBs in electromagnetic switches, voltage regulators, capacitors, heat transfer and hydraulic systems, circuit breakers, reclosers, and cable is allowed if applicable restrictions are met and precautions taken (40 CFR 761.30)) **[Revised October 1998]**.

- PCB Storage - PCBs and PCB Items at concentrations greater than 50 ppm that are to be stored before disposal must be stored in a facility that: assures the containment of PCBs, prevents rainfall from contacting PCBs and PCB Items, has a 6 in. curb, is correctly labeled, and follows the specific operational procedures required of PCB storage units. Storage prior to disposal is not to exceed 1 yr. Nonleaking and structurally undamaged PCB Large, High-Voltage Capacitors and PCB-Contaminated Electric Equipment that have not been drained of freeflowing dielectric fluid may be stored on pallets next to a storage area that complies with the storage area requirements if they are checked weekly. Containers used for the storage of PCBs must comply with the shipping container specification of the Department of Transportation (DOT). Specific requirements must be met for the following: storage of PCB articles for re-use, storage of PCB household waste, storage of PCBs and PCB items in areas not in compliance with the storage area requirements, and storage of bulk PCB remediation waste or PCB bulk product (40 CFR 761.35 & 761.65)) **[Revised October 1998]**.

- PCB Transportation - A generator who offers a PCB Waste for transport to commercial offsite storage or offsite disposal must prepare a manifest. If the generator does not receive a signed

copy of the manifest within 35 days from the date the waste was accepted by the initial transporter, the generator must immediately contact the transporter and/or owner or operator of the designated facility to determine the status of the PCB Waste (40 CFR 761.207 through 761.210 and 761.215) **[Revised October 1998]**.

- PCB Disposal - For each shipment of manifested PCB Waste that a disposal facility accepts, the owner or operator of the disposal facility must prepare a certificate of disposal (COD). PCB-contaminated fluids of concentrations greater than or equal to 50 ppm, but less than 500 ppm, are required to be disposed of in a USEPA-approved incinerator, or chemical waste landfill, or a high efficiency boiler. PCB Liquids and Transformers with concentrations of 500 ppm or greater must be disposed of in either a USEPA-approved PCB incinerator or a chemical waste landfill. PCB Capacitors must be disposed of in either a solid waste landfill (nonleaking PCB Small Capacitor only) or an approved incinerator. PCB hydraulic machines containing PCBs at concentrations greater than or equal to 50 ppm may be disposed of as municipal solid waste when drained. PCB-Contaminated Electrical Equipment, except capacitors, shall be disposed of by draining off the free-flowing liquid and then disposing of the drained equipment in: 1) a municipal solid waste unit (except thermal treatment units), 2) an industrial furnace, or 3) any other approved disposal facility. PCB Articles and Containers shall be disposed of in a USEPA-approved incinerator or chemical waste landfill if all free-flowing liquids have been removed. The following disposal methods are prohibited for PCB disposal: 1) open burning, 2) processing of PCBs into non-liquid forms to circumvent high temperature incineration requirements, and 3) discharging of PCBs into a water treatment works or navigable waters (unless PCB concentration is equal to or less than 3 ppb, or is in accordance with a PCB discharge limit set in a permit). Land disposal of PCBs must be in accordance with specific parameters. When disposing of PCB bulk product using performance-based disposal, PCB bulk product may be disposed of in an approved incinerator or chemical waste landfill, a permitted hazardous waste landfill, or through any other approved alternative method. Otherwise, PCB bulk product must be disposed of in a permitted municipal or non-municipal, non-hazardous waste landfill. PCB household waste must be disposed of in a facility permitted to manage municipal or industrial solid waste, or in any other facility given approval to dispose of PCB bulk product waste (40 CFR 761.50(a)(1) through 761.50(a)(3), 761.50(a)(5), 761.60, 761.62(a) through 761.62(d), 761.63 and 761.218) **[Revised October 1998]**.

- Asbestos Identification - Regions are required to implement a program to inspect buildings under their control for the presence of asbestos (561 FW 8.6A(1)).

- Renovation and Demolition of Asbestos-Containing Structures - Facilities that demolish structures containing asbestos above certain limits, must meet notification requirements, emission control requirements and wetting requirements. This applies to facilities that demolish structures containing at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m^2 (160 ft^2) of RACM on other components or at least 1 m^3 (35 ft^3) off facility components, and facilities renovating structures and stripping or removing at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m^2 (160 ft^2) of friable asbestos on other facility components and at least 1 m^3 (35 ft^3) off facility components. If the concentration of asbestos is less than this level, then the facility must submit notification of demolition. Facilities being demolished under state or local governmental agency orders shall have the portion of the facility containing friable asbestos adequately wetted during the wrecking operation. When a facility is demolished by intentional burning, all regulated asbestos-containing materials (RACM) must be removed. No RACM shall be stripped, removed, or otherwise handled or distributed unless at least one onsite representative trained in asbestos removal is present. When air cleaning is used as a method of controlling emissions of asbestos to the outside air, the fabric filter collection systems are required to meet specific standards, unless alternative equipment is authorized for use by the USEPA (40 CFR 61.145 and 61.152).

- Asbestos Labeling - Warning labels must be affixed to ACM or PACM raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers 29 CFR 1910.1001(j)(4)(i). But according to FWS policy, all ACM left in place will be labeled to alert potential maintenance operations of the potential hazard (561 FW 8.6C(2)).

- Asbestos Disposal - Asbestos-containing waste must be wetted or bagged to prevent emissions to the air. Asbestos waste has to be disposed of in landfills that have been approved for the acceptance of asbestos-containing waste (40 CFR 61.150, 61.151, and 61.154).

- Employees and Asbestos - All employees working with asbestos at levels at or above the permissible exposure level (PEL) and/or excursion limit for 30 or more days per year are required to participate in a medical surveillance program (561 FW 8.6H).

- Environmental Noise - Making continuous or excessive noise at any time or any place by any means is prohibited when it interferes with an authorized use or project purpose. A single facility point of contact should be identified for noise complaints (MP).

- Radon - Radon monitoring is required at all Service buildings which are occupied. Monitoring is to be done according to specific priorities. Mitigation of buildings is based on the radon levels detected (561 FW 12).

- Disclosure of Lead-Based Paint (LBP) and/or LBP Hazards - When leasing or selling target housing, the facility is required to disclose any knowledge it has of the presence of known LBP and/or LBP hazards (40 CFR 745.100). Work done related to LBP activities must be done by certified individuals and firms according to approved work practices (40 CFR 745.220 - 745.229).

- Notification of LBP Hazards Prior to Renovation - Renovators are required to notify the owners and occupants of target housing prior to renovation of any LBP hazards (40 CFR 745.81 through 745.86) **[Added June 1998].**

- Recordkeeping - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

F. Key Compliance Definitions

- *Abatement* - any measure or set of measures designed to permanently eliminate LBP hazards. Abatement includes, but is not limited to (40 CFR 745.223):
    1. the removal of LBP and lead-contaminated dust, the permanent enclosure or encapsulation of LBP, the replacement of lead painted surface or fixtures, and the removal or covering of lead contaminated soil
    2. all preparation, cleanup, disposal, and post-abatement clearance testing activities associated with such measures
    3. specifically, abatement includes, but is not limited to:
        a. projects for which there is a written contract or other documentation, which provides that an individual or firm will be conducting activities in or to a residential dwelling or child-occupied facilities that either:
            i. shall result in the permanent elimination of LBP hazards, or
            ii. are designed to permanently eliminate LBP hazards.
        b. projects resulting in the permanent elimination of LBP hazards, conducted by firms or individuals who are certified, unless such projects are covered by paragraph 4 of this definition

c. projects resulting in the permanent elimination of LBP hazards, conducted by firms or individuals who, through their company name or promotional literature, represent, advertising, or hold themselves out to be in the business of performing LBP activities as identified and defined in this regulation, unless such projects are covered by paragraph 4 of this definition
d. projects resulting in the permanent elimination of LBP hazards that are conducted in response to state or local abatement orders.

4. abatement does not include renovation, remodeling, landscaping or other activities, when such activities are not designed to permanently eliminate LBP hazards, but, instead, are designed to repair, restore, or remodel a given structure or dwelling even though these activities may incidentally result in a reduction or elimination of LBP hazards. Furthermore, abatement does not include interim controls, operations, and maintenance activities, or other measures and activities designed to temporarily, but not permanently, reduce LBP hazards.

- *Active Waste Disposal Site* - any disposal site other than an inactive site (40 CFR 61.14).

- *Adequately Wetted* - sufficiently mixed or penetrated with liquid to prevent the release of particulates (40 CFR 61.14).

- *Air Compressor System* - air compressors, piping, receiver tanks, volume tanks and bottles, dryers, airlines, and related appurtenances (40 CFR 761.3) **[Added October 1998].**

- *Asbestos* - substances comprised of or derived from actinolite, amosite, anthophyllite, chrysotile, crocidolite, or tremolite (40 CFR 61.14).

- *Asbestos-Containing Waste Materials* - mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of 40 CFR 141. This term also includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. However, as applied to demolition and renovation operations, this term includes regulated ACM waste and materials contaminated with asbestos including disposable equipment and clothing (40 CFR 61.141).

- *Asbestos Material* - asbestos or any material containing asbestos (40 CFR 61.141).

- *Asbestos Waste from Control Devices* - any waste material that contains asbestos and is collected by a pollution control device (40 CFR 61.141).

- *Capacitor* - a device for accumulating and holding a charge of electricity and consisting of conducting surfaces separated by a dielectric. Types of capacitors are as follows (40 CFR 761.3):
  1. *Small Capacitor* - a capacitor which contains less than 1.36 kg (3 lb) of dielectric fluid.
  2. *Large, High-Voltage Capacitor* - a capacitor which contains 1.36 kg (3 lb) or more of dielectric fluid and which operates at 2000 V (a.c. or d.c.) or above.
  3. *Large, Low-Voltage Capacitor* - a capacitor which contains 1.36 kg (3 lb) or more of dielectric fluid and which operates at 2000 V (a.c. or d.c.).

- *Category I Nonfriable Asbestos-Containing Material (ACM)* - asbestos-containing packing, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos (40 CFR 61.141).

- *Category II Nonfriable ACM* - any material including Category I nonfriable ACM containing more than 1 percent asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure (40 CFR 61.141).

- *Chemical Waste Landfill* - landfill at which protection against risk of injury to health or the environment from mitigation of PCBs to land, water, or the atmosphere is provided from PCBs and PCB Items deposited therein by locating, engineering, and operating the landfill as required (40 CFR 761.3).

- *Child-occupied Facility* - a building or a portion of a building constructed prior to 1978, visited regularly by the same child, 6 yr of age or under, on at least 2 different days within any week (Sunday through Saturday period), provided that each day's visit last at least 3 h and the combined weekly visit lasts at least 6 h, and the combined annual visits last at least 60 h. Child-occupied facilities may include, but are not limited to, day-care centers, preschools, and kindergarten classrooms (40 CFR 745.223).

- *Cleanup Site* - the real extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of a cleanup of PCB remediation waste, regardless of whether the site was intended for management of waste (40 CFR 761.3) **[Added October 1998].**

- *Clearance Levels* - values that indicate the maximum amount of lead permitted in dust on a surface following completion of an abatement activity (40 CFR 745.223).

- *Commercial Asbestos* - any material containing asbestos that is extracted from ore and has value because of its asbestos content (40 CFR 61.141).

- *Commercial Storer of PCB Waste* - the owner or operator of each facility that is subject to the PCB storage unit standards of Sec. 761.65(b)(1) or (c)(7) or meets the alternate storage criteria of Sec. 761.65(b)(2), and who engages in storage activities involving either PCB waste generated by others or that was removed while servicing the equipment owned by others and brokered for disposal. The receipt of a fee or any other form of compensation for storage services is not necessary to qualify as a commercial storer of PCB waste. A generator who only stores its own waste is subject to the storage requirements of Sec. 761.65, but is not required to obtain approval as a commercial storer. If a facility's storage of PCB waste generated by others at no time exceeds a total of 500 gallons of liquid and/or non-liquid material containing PCBs at regulated levels, the owner or operator is a commercial storer but is not required to seek USEPA approval as a commercial storer of PCB waste. Storage of one company's PCB waste by a related company is not considered commercial storage. A "related company" includes, but is not limited to: a parent company and its subsidiaries; sibling companies owned by the same parent company; companies owned by a common holding company; members of electric cooperatives; entities within the same Executive Agency as defined at 5 U.S.C. 105; and a company having a joint ownership interest in a facility from which PCB waste is generated (such as a jointly owned electric power generating station) where the PCB waste is stored by one of the co-owners of the facility. A "related company" does not include another voluntary member of the same trade association. Change in ownership or title of a generator's facility, where the generator is storing PCB waste, does not make the new owner of the facility a commercial storer of PCB waste (40 CFR 761.3) **[Revised October 1998].**

- *Common Area* - a portion of a building generally accessible to all residents/users including, but not limited to, hallways, stairways, laundry and recreational rooms, playgrounds, community centers, and boundary fences (40 CFR 745.103).

- *Contract for the Purchase and Sale of Residential Real Property* - any contract or agreement in which one party agrees to purchase an interest in real property on which there is situated one or more residential dwellings used or occupied, or intended to be used or occupied, in whole or in part, as the home or residence of one or more persons (40 CFR 745.103).

- *Cutting* - to penetrate with a sharp-edged instrument and includes sawing, but does not include shearing, slicing, or punching (40 CFR 61.141).

- *dBA* - sound level in decibels, measured using the A-weighting network of a sound level meter.

- *dBC* - a sound level in decibels, measured using the C-weighting network of a sound level meter.

- *Decibel (dB)* - sound is measured in decibels. The zero on the decibel scale is based on the lowest sound level that a healthy, unimpaired human ear can hear. Decibels are not linear, but representative points on a sharply rising (exponential) curve.

- *Demolition* - the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of a facility (40 CFR 61.141).

- *Deteriorated Paint* - paint that is cracking, flaking, chipping, peeling, or otherwise separating from the substrate of a building component (40 CFR 745.223).

- *Disposal* - intentionally or accidentally to discard, throw away, or otherwise complete or terminate the useful life of PCBs and PCB Items (40 CFR 761.3).

- *Distinct Painting History* - the application history, as indicated by its visual appearance or a record of application, over time, of paint or other surface coatings to a component or room (40 CFR 745.223).

- *Documented Methodologies* - methods or protocols used to sample for the presence of lead in paint, dust, and soil (40 CFR 745.223).

- *Double Wash/Rinse* - a minimum requirement to cleanse solid surfaces (both impervious and nonimpervious) two times with an appropriate solvent or other material in which PCBs are at least 5 percent soluble (by weight) (40 CFR 761.123).

- *Dry Weight* - the weight of the sample, excluding the weight of the water in the sample. Prior to chemical analysis, the water may be removed by any reproducible method that is applicable to measuring PCBs in the sample matrix at the concentration of concern, such as air drying at ambient temperature, filtration, decantation, heating at low temperature followed by cooling in the

  presence of a desiccant, or other processes or combinations of processes which would remove water but not remove PCBs from the sample. Analytical procedures which calculate the dry weight concentration by adjusting for moisture content may also be used (40 CFR 761.3) **[Added October 1998].**

- *Elevated Blood Level (EBL)* - an excessive absorption of lead that is a confirmed concentration of lead in whole blood of 20 micrograms/deciliter (dl) for a single venous test or of 15 - 19 micrograms/dl in two consecutive tests taken 3 to 4 mo apart (40 CFR 745.223).

- *Emergency Renovation Operation* - a renovation operation that was not planned but results from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, is necessary to protect equipment from damage or is necessary to avoid imposing an unreasonable financial burden. This term includes operations necessitated by nonroutine failures of equipment (40 CFR 61.141).

- *Emergency Renovation Operations* - renovation activities, such as operations necessitated by non-routine failures of equipment, that were not planned but result from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, or threatens equipment and/or property with significant damage (40 CFR 745.83) **[Added June 1998]**.

- *Emergency Situations* - for continuing use of a PCB Transformer exists when (40 CFR 761.3):
  1. neither a non-PCB Transformer nor a non-PCB-contaminated transformer is currently in storage for reuse or readily available within 24 h for installation
  2. immediate replacement is necessary to continue service for power users.

- *Evaluation* - for LBP this means a risk assessment and/or inspection (40 CFR 745.103).

- *Facility Component* - any part of any facility, including equipment (40 CFR 61.141).

- *Friable Asbestos Material* - any material that contains more than 1 percent asbestos and can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure (40 CFR 61.141).

- *Fugitive Source* - any source of emissions not controlled by an air pollution control device (40 CFR 61.141).

- *Glove Bag* - a sealed compartment with attached inner gloves used for the handling of ACM (40 CFR 61.141).

- *High Concentration PCBs* - PCBs that contain 500 ppm or greater PCBs, or those materials which the USEPA requires to be assumed to contain 500 ppm or greater PCBs in the absence of testing (40 CFR 761.123).

- *High Occupancy Area* - any area where PCB remediation waste has been disposed of onsite and where occupancy for any individual not wearing dermal and respiratory protection for a calendar year is: 840 hours or more (an average of 16.8 h or more per week) for non-porous surfaces and 335 hours or more (an average of 6.7 hours or more per week) for bulk PCB remediation waste. Examples could include a residence, school, day care center, sleeping quarters, a single or multiple occupancy 40 hours per week work station, a school class room, a cafeteria in an industrial facility, a control room, and a work station at an assembly line (40 CFR 761.3) **[Added October 1998]**.

- *In or Near Commercial Buildings* - within the interior of, on the roof of, attached to the exterior wall of, in the parking area serving, or within 30 m of a nonindustrial, nonsubstation building (40 CFR 761.3).

- *In Poor Condition* - the binding of the materials is losing its integrity as indicated by peeling, cracking, or crumbling of the material (40 CFR 61.141).

- *Inactive Waste Disposal Site* - any disposal site or portion of it where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic (40 CFR 61.141).

- *Industrial Building* - a building directly used in manufacturing or technically productive enterprises (40 CFR 761.3).

- *Inspection* - for LBP this means (40 CFR 745.103):
  1. a surface by surface investigation to determine the presence of LBP as provided in section 302(c) of the *Lead Based Paint Poisoning and Prevention Act* (42 USC 4822)

2. the provision of a report explaining the results of the investigation.

- *Lead-Based Paint (LBP)* - paint or other surface coatings that contain lead equal to or in excess of 1.0 mg/cm^2 or 0.5 percent by weight (40 CFR 745.103).

- *Lead Based Paint Activities* - in the case of target housing and child-occupied facilities, inspection, risk assessment, and abatement (40 CFR 745.223).

- *Lead-Based Paint Free Housing* - target housing that has been found to be free of paint or other surface coatings that contain lead equal to or in excess of 1.0 mg/cm^2 or 0.5 percent by weight (40 CFR 745.103).

- *Lead-Based Paint Hazard* - any condition that causes exposure to lead from lead-contaminated dust, lead contaminated soil, or lead-contaminated paint that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects as established by the appropriate Federal agency (40 CFR 745.103).

- *Lead Contaminated Dust* - surface dust in residential dwellings, or child-occupied facilities that contains an area or mass concentration of lead at or in excess of levels identified by the Administrator pursuant to TSCA section 403 (40 CFR 745.223).

- *Lead Contaminated Soil* - bare soil on residential real property and on the property of a child-occupied facility that contains lead at or in excess of levels identified by the Administrator pursuant to TSCA section 403 (40 CFR 745.223).

- *Leak or Leaking* - any instance in which a PCB Article, PCB Container, or PCB Equipment has any PCBs on any portion of its external surface (40 CFR 761.3).

- *Lessee* - any entity that enters into agreement to lease, rent, or sublease target housing, including but not limited to individuals, partnerships, corporations, trusts, government agencies, housing agencies, Indian tribes, and nonprofit organizations (40 CFR 745.103).

- *Lessor* - any entity that offers target housing for lease, rent, or sublease, including but not limited to individuals, partnerships, corporations, trusts, government agencies, housing agencies, Indian tribes, and nonprofit organizations (40 CFR 745.103).

- *Liquid PCBs* - a homogenous flowable material containing PCBs and no more than 0.5 percent by weight non-dissolved material (40 CFR 761.3) **[Added October 1998]**.

- *Low Concentration PCBs* - PCBs that are tested and found to contain less than 500 ppm PCBs or those PCB-containing materials which USEPA requires to be assumed to be at concentrations below 500 ppm (i.e., untested mineral oil dielectric fluid) (40 CFR 761.123).

- *Low Occupancy Area* - any area where PCB remediation waste has been disposed of onsite and where occupancy for any individual not wearing dermal and respiratory protection for a calendar year is: less than 840 h (an average of 16.8 h/week) for non-porous surfaces and less than 335 h (an average of 6.7 h/week) for bulk PCB remediation waste. Examples could include an electrical substation or a location in an industrial facility where a worker spends small amounts of time per week (such as an unoccupied area outside a building, an electrical equipment vault, or in the non-office space in a warehouse where occupancy is transitory) (40 CFR 761.3) **[Added October 1998]**.

- *Management Practice* (MP) - practices that, although not mandated by law, are encouraged to promote safe operating procedures.

- *Mark* - the descriptive name, instructions, cautions, or other information applied to PCBs and PCB Items, or other objects subject to these regulations (40 CFR 761.3).

- *Marking* - the marking of PCB Items and PCB storage areas and transport vehicles by means of applying a legible mark by painting, fixation of an adhesive label, or by any other method that meets the requirements of these regulations (40 CFR 761.3).

- *Mineral Oil PCB Transformers* - any transformer originally designed to contain mineral oil as the dielectric fluid and which has been tested and found to contain 500 ppm or greater PCBs (40 CFR 761.3).

- *Multi-family Dwelling* - a structure that contains more than one separate residential dwelling unit, which is used or occupied, or intended to be used or occupied, in whole or in part as the home or residence of one or more persons (40 CFR 745.223).

- *Multi-Family Housing* - a housing property consisting of more than four dwelling units (40 CFR 745.83) **[Added June 1998].**

- *Non-Liquid PCBs* - materials containing PCBs that by visual inspection do not flow at room temperature (25 °C or 77 °F) or from which no liquid passes when a 100 g or 100 ml representative sample is placed in a mesh number 60 +/- 5 percent paint filter and allowed to drain at room temperature for 5 min (40 CFR 761.3) **[Added October 1998].**

- *Non-PCB Transformers* - any transformer that contains less than 50 ppm PCB except that any transformer that has been converted from a PCB Transformer or a PCB-Contaminated transformer cannot be classified as a non-PCB Transformer until reclassification has occurred in accordance with the requirements of 40 CFR 761.30(a)(2)(v) (40 CFR 761.3).

- *Non-Porous Surface* - a smooth, unpainted solid surface that limits penetration of liquid containing PCBs beyond the immediate surface. Examples are: smooth uncorroded metal; natural gas pipe with a thin porous coating originally applied to inhibit corrosion; smooth glass; smooth glazed

  ceramics; impermeable polished building stone such as marble or granite; and high density plastics, such as polycarbonates and melamines, that do not absorb organic solvents (40 CFR 761.3) **[Added October 1998].**

- *Nonscheduled Renovation* - a renovation operation necessitated by the routine failure of equipment, which is expected to occur within a given period based on past operating experience, but for which an exact date cannot be predicted (40 CFR 61.141).

- *Outside Air* - the air outside buildings and structures, including but not limited to, air under a bridge or an open ferry dock (40 CFR 61.141).

- *Owner* - any entity that has legal title to target housing, including but not limited to individuals, partnerships, corporations, trusts, government agencies, housing agencies, Indian tribes, and nonprofit organizations except where a mortgage holds legal title to property serving as collateral for a mortgage loan, in which case the owner would be the mortgagor (40 CFR 745.103).

- *PCB or PCBs* - a chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contains such substance (40 CFR 761.3).

- *PCB Article* - any manufactured article, other than a PCB Container, that contains PCBs and whose surface(s) has been in direct contact with PCBs. This includes capacitors, transformers, electric motors, pumps, and pipes (40 CFR 761.3).

- *PCB Article Container* - any package, can, bottle, bag, barrel, drum, tank, or other device used to contain PCB Articles or PCB Equipment, and whose surface(s) has not been in direct contact with PCBs (40 CFR 761.3).

- *PCB Bulk Product Waste* - waste derived from manufactured products containing PCBs in a non-liquid state, at any concentration where the concentration at the time of designation for disposal was >/= 50 ppm PCBs. PCB bulk product waste does not include PCBs or PCB Items regulated for disposal under 40 CFR 761.60(a) through (c), 761.61, 761.63, or 761.64. PCB bulk product waste includes, but is not limited to**[Added October 1998]**:
    1. non-liquid bulk wastes or debris from the demolition of buildings and other man-made structures manufactured, coated, or serviced with PCBs. PCB bulk product waste does not include debris from the demolition of buildings or other man-made structures that is contaminated by spills from regulated PCBs which have not been disposed of, decontaminated, or otherwise cleaned up in accordance with subpart D of this part.
    2. PCB-containing wastes from the shredding of automobiles, household appliances, or industrial appliances.
    3. plastics (such as plastic insulation from wire or cable; radio, television and computer casings; vehicle parts; or furniture laminates); preformed or molded rubber parts and components; applied dried paints, varnishes, waxes or other similar coatings or sealants; caulking; adhesives; paper; Galbestos; sound deadening or other types of insulation; and felt or fabric products such as gaskets.
    4. fluorescent light ballasts containing PCBs in the potting material (40 CFR 761.3).

- *PCB Capacitor* - any capacitor that contains >/= 500 ppm PCB. Concentration assumptions applicable to capacitors appear under Sec. 761.2 (40 CFR 761.3) **[Added October 1998]**.

- *PCB Concentration Assumptions* - the following assumption may be made in relation to PCB concentrations (40 CFR 761.2(a) **[Added October 1998]**:
    1. transformers with <3 pounds (1.36 kg) of fluid, circuit breakers, reclosers, oil-filled cable, and rectifiers whose PCB concentration is not established contain PCBs at <50 ppm
    2. mineral oil-filled electrical equipment that was manufactured before 2 July 1979, and whose PCB concentration is not established is PCB-Contaminated Electrical Equipment (i.e., contains >/= 50 PCB, but <500 ppm PCB)
    3. all pole-top and pad-mounted distribution transformers manufactured before 2 July 1979 are assumed to be mineral-oil filled
    4. electrical equipment manufactured after 2 July 1979 is non-PCB (i.e., <50 ppm PCBs). If the date of manufacture of mineral oil-filled electrical equipment is unknown, assume it to be PCB-Contaminated.
    5. transformers manufactured prior to 2 July 1979, that contain 1.36 kg (3 pounds) or more of fluid other than mineral oil and whose PCB concentration is not established, are PCB Transformers (i.e., >/= 500 ppm). If the date of manufacture or the type of dielectric fluid is unknown, assume the transformer to be a PCB Transformer.
    6. a capacitor manufactured prior to 2 July 1979, whose PCB concentration is not established contains >/= 500 ppm PCBs.
    7. a capacitor manufactured after 2 July 1979 is non-PCB (i.e., <50 ppm PCBs). If the date of manufacture is unknown, assume the capacitor contains >/= 500 ppm PCBs

8. a capacitor marked at the time of manufacture with the statement "No PCBs" in accordance with Sec. 761.40(g) is non-PCB.

- *PCB-Contaminated* - a non-liquid material containing PCBs at concentrations >/= 50 ppm but <500 ppm; a liquid material containing PCBs at concentrations >/= 50 ppm but <500 ppm or where insufficient liquid material is available for analysis, a non-porous surface having a surface concentration >10 µg/100 cm^2 but <100 µg/100 cm^2, measured by a standard wipe test as defined in 40 CFR 761.123 (40 CFR 761.3) **[Added October 1998].**

- *PCB-Contaminated Electrical Equipment* - any electrical equipment including, but not limited to, transformers (including those used in railway locomotives and self-propelled cars), capacitors, circuit breakers, reclosers, voltage regulators, switches (including sectionalizers and motor starters), electromagnets, and cable, that contains PCBs at concentrations of >/= 50 ppm and <500 ppm in the contaminating fluid. In the absence of liquids, electrical equipment is PCB-Contaminated if it has PCBs at >10 µg/100 cm^2 and <100 µg/100 cm^2 as measured by a standard wipe test (as defined in 40 CFR 761.123) of a non-porous surface (40 CFR 761.3) **[Revised October 1998].**

- *PCB Equipment* - any manufactured item, other than a PCB Container or a PCB Article container, which contains a PCB Article or other PCB Equipment, and includes microwave ovens, electronic equipment, and fluorescent light ballasts and fixtures (40 CFR 761.3).

- *PCB Field Screening Test* - a portable analytical device or kit which measures PCBs. PCB field screening tests usually report less than or greater than a specific numerical PCB concentration. These tests normally build in a safety factor which increases the probability of a false positive report and decreases the probability of a false negative report. PCB field screening tests do not usually provide: an identity record generated by an instrument; a quantitative comparison record from calibration standards; any identification of PCBs; and/or any indication or identification of interferences with the measurement of the PCBs. PCB field screening test technologies include, but are not limited to, total chlorine colorimetric tests, total chlorine x-ray fluorescence tests, total chlorine microcoulometric tests, and rapid immunoassay tests (40 CFR 761.3) **[Added October 1998].**

- *PCB Household Waste* - PCB waste that is generated by residents on the premises of a temporary or permanent residence for individuals (including individually owned or rented units of a multi-unit construction), and that is composed primarily of materials found in wastes generated by consumers in their homes. PCB household waste includes unwanted or discarded non-commercial vehicles (prior to shredding), household items, and appliances or appliance parts and wastes generated on the premises of a residence for individuals as a result of routine household maintenance by or on behalf of the resident. Bulk or commingled liquid PCB wastes at concentrations of >/= 50 ppm, demolition and renovation wastes, and industrial or heavy duty equipment with PCBs are not household wastes (40 CFR 761.3) **[Added October 1998].**

- *PCB Item* - any PCB Article, PCB Article Container, PCB Container, PCB Equipment, or anything that deliberately or unintentionally contains or has as a part of it any PCB or PCBs (40 CFR 761.3) **[Revised October 1998].**

- *PCB/Radioactive Waste* - PCBs regulated for disposal under subpart D of this part that also contain source, special nuclear, or byproduct material subject to regulation under the *Atomic Energy Act of 1954,* as amended, or naturally-occurring or accelerator-produced radioactive material (40 CFR 761.3) **[Added October 1998].**

- *PCB Remediation Waste* - waste containing PCBs as a result of a spill, release, or other unauthorized disposal, at the following concentrations: Materials disposed of prior to 18 April 1978, that are currently at concentrations >/= 50 ppm PCBs, regardless of the concentration of the original spill; materials which are currently at any volume or concentration where the original source was >/= 500 ppm PCB beginning on 18 April 1978, or >/= 50 ppm PCB beginning on 2 July 1979; and materials which are currently at any concentration if the PCBs are from a source not authorized for use under this part. PCB remediation waste means soil, rags, and other debris generated as a result of any PCB spill cleanup, including, but not limited to (40 CFR 761.3) **[Added October 1998]:**
    1. environmental media containing PCBs, such as soil and gravel; dredged materials, such as sediments, settled sediment fines, and aqueous decantate from sediment.
    2. sewage sludge containing <50 ppm PCBs and not in use according to Sec. 761.20(a)(4); PCB sewage sludge; commercial or industrial sludge contaminated as the result of a spill of PCBs including sludges located in or removed from any pollution control device; aqueous decantate from an industrial sludge.
    3. buildings and other man-made structures, such as concrete or wood floors or walls contaminated from a leaking PCB or PCB-Contaminated transformer, porous surfaces and non-porous surfaces (40 CFR 761.3).

- *PCB Sewage Sludge* - sewage sludge as defined in 40 CFR 503.9(w) which contains >/= 50 ppm PCBs, as measured on a dry weight basis (40 CFR 761.3) **[Added October 1998].**

- *PCB Transformer* - any transformer that contains >/= 500 ppm PCBs. For PCB concentration assumptions applicable to transformers containing 1.36 kg (3 lbs.) or more of fluid other than mineral oil, see 40 CFR 761.2. For provisions permitting reclassification of electrical equipment, including PCB Transformers, containing >/= 500 ppm PCBs to PCB-Contaminated Electrical Equipment, see 40 CFR 761.30(a) and (h) (40 CFR 761.3) **[Revised October 1998].**

- *PCB Waste* - those PCBs and PCB Items that are subject to the disposal requirements of Subpart D of 761 (40 CFR 761.3).

- *Paint in Poor Condition* - more than 10 ft^2 of deteriorated paint or exterior components with large surface areas; or more than 2 ft^2 of deteriorated paint on interior components with large surface areas (e.g, walls, ceilings, floors, doors); or more than 10 percent of the total surface area of the component is deteriorated on interior or exterior components with small surface areas (window sills, baseboards, soffits, trim) (40 CFR 745.223).

- *Pamphlet* - the USEPA pamphlet developed under section 406(a) of TSCA for use in complying with this and other rulemakings under Title IV of TSCA and the Residential Lead-Based Paint Hazard Reduction Act, or any state or tribal pamphlet approved by USEPA pursuant to 40 CFR 745.326 that is developed for the same purpose. This includes reproductions of the pamphlet when copied in full and without revision or deletion of material from the pamphlet (except for the addition or revision of state or local sources of information) (40 CFR 745.83)**[Added June 1998].**

- *Particulate Asbestos Material* - finely divided particles of asbestos or material containing asbestos (40 CFR 61.141).

- *Permanently Covered Soil* - soil which has been separated from human contact by the placement of a barrier consisting of solid, relatively impermeable materials, such as pavement or concrete. Grass, mulch, and other landscaping materials are not considered permanent covering (40 CFR 745.223).

- *Person* - any natural or judicial person including any individual, corporation, partnership, or association; any Indian tribe, state, or political subdivision thereof; any interstate body; and any department, agency, or instrumentality of the Federal Government (40 CFR 745.83)**[Added June 1998]**.

- *Planned Renovation Operations* - a renovation operation, or a number of such operations, in which the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time based on operating experience (40 CFR 61.141).

- *Porous Surface* - any surface that allows PCBs to penetrate or pass into itself including, but not limited to, paint or coating on metal; corroded metal; fibrous glass or glass wool; unglazed ceramics; ceramics with a porous glaze; porous building stone such as sandstone, travertine, limestone, or coral rock; low-density plastics such as styrofoam and low-density polyethylene; coated (varnished or painted) or uncoated wood; concrete or cement; plaster; plasterboard; wallboard; rubber; fiberboard; chipboard; asphalt; or tar paper. For purposes of cleaning and disposing of PCB remediation waste, porous surfaces have different requirements than non-porous surfaces (40 CFR 761.3) **[Added October 1998]**.

- *Posing an Exposure Risk to Food or Feed* - being in any location where human food or animal feed products could be exposed to PCBs released from a PCB Item (40 CFR 761.3).

- *Purchaser* - an entity that enters into an agreement to purchase an interest in target housing, including but not limited to individuals, partnerships, corporations, trusts, government agencies, housing agencies, Indian tribes, and nonprofit organizations (40 CFR 745.103).

- *Radon* - an inert, colorless, odorless, naturally occurring radioactive gas that is formed from the radioactive decay of radium (Ra) atoms (561 FW 12.4B).

- *Reduction* - measures designed to reduce or eliminate human exposure to lead-based paint hazards through methods including interim controls and abatement (40 CFR 745.103).

- *Regulated Asbestos-Containing Material (RACM)* - includes friable asbestos material; Category I nonfriable ACM that has become friable; Category I nonfriable ACM that has been subjected to grinding, casting, cutting, or abrading; and Category II nonfriable ACM that has a high probability of becoming crumbled, crushed, or pulverized (40 CFR 61.141).

- *Remove* - to take out RACM from any structure (40 CFR 61.141).

- *Renovation* - altering in any way one or more structure components. Operations in which load-supporting structural members are wrecked or taken out are excluded (40 CFR 61.141).

- *Renovation* - the modification of any existing structure, or portion thereof, that results in the disturbance of painted surfaces, unless that activity is performed as part of an abatement as defined by this part (40 CFR 745.223). The term renovation includes (but is not limited to): the removal or modification of painted surfaces or painted components (e.g., modification of painted doors, surface preparation activity (such as sanding, scraping, or other such activities that may generate paint dust)); the removal of large structures (e.g., walls, ceiling, large surface replastering, major re-plumbing); and window replacement (40 CFR 745.83)**[Added June 1998]**.

- *Renovator* - any person who performs for compensation a renovation. (40 CFR 745.83) **[Added June 1998]**.

- *Research and Development (R&D) for PCB Disposal* - demonstrations for commercial PCB disposal approvals, pre-demonstration tests, tests of major modifications to previously approved PCB disposal technologies, treatability studies for PCB disposal technologies which have not been approved, development of new disposal technologies, and research on chemical transformation processes including, but not limited to, biodegradation (40 CFR 761.3) **[Added October 1998].**

- *Residential Dwelling* - for LBP this means (40 CFR 745.103):
    1. a single family dwelling, including attached structures such as porches and stoops
    2. a single family dwelling unit in a structure that contains more than one separate residential dwelling unit, and in which such unit is used or occupied, in whole or in part, as the residence of one or more persons.

- *Retrofill* - to remove PCB or PCB-contaminated dielectric fluid and replace it with either PCB, PCB-contaminated, or non-PCB dielectric fluid (40 CFR 761.3).

- *Risk Assessment* - an onsite investigation to determine and report the existence, nature, severity, and location of LBP hazards in residential dwellings, including (40 CFR 745.103):
    1. information gathering regarding the age and history of the housing and occupancy by children under age 6
    2. visual inspections
    3. limited wipe sampling or other environmental sampling techniques;
    4. other activity as may be appropriate; and
    5. provision of a report explaining the results of the investigation.

- *Rupture of a PCB Transformer* - a violent or nonviolent break in the integrity of a PCB Transformer caused by an overtemperature and/or overpressure condition that results in the release of PCBs (40 CFR 761.3).

- *Seller* - any entity that transfers legal title to target housing, in whole or in part, in return for consideration, including but not limited to individuals, partnerships, corporations, trusts, government agencies, housing agencies, Indian Tribes, and nonprofit organizations. The term seller also includes (40 CFR 745.103):
    1. an entity that transfers shares in a cooperatively owned project, in return for consideration
    2. an entity that transfers its interest in a leasehold, in jurisdictions or circumstances where it is legally permissible to separate the fee title from the title to the improvement, in return for consideration.

- *Sewage Sludge* - sewage sludge as defined in Sec. 503.9(w) of this chapter that contains < 50 ppm (on a dry weight basis) PCBs (40 CFR 761.3) **[Added October 1998].**

- *Soil Washing* - the extraction of PCBs from soil using a solvent, recovering the solvent from the soil, separating the PCBs from the recovered solvent for disposal, and then disposal or reuse of the solvent (40 CFR 761.3) **[Added October 1998].**

- *Standard Wipe Sample* - a sample collected for chemical extraction and analysis using the standard wipe test as defined in 40 CFR 761.123. Except as designated elsewhere in part 761, the minimum surface area to be sampled shall be 100 cm^2 (40 CFR 761.3) **[Added October 1998].**

- *Strip* - to take off RACM from any part of a facility (40 CFR 61.141).

- *Structural Member* - any load-supporting member of a structure, such as beams and load-supporting walls; or any nonload-supporting member, such as ceilings and nonload-supporting walls (40 CFR 61.141).

- *SW-846* - the document having the title "SW-846, Test Methods for Evaluating Solid Waste," which is available from either the National Technical Information Service (NTIS, U.S. Department of Commerce, 5285 Port Royal Rd., Springfield, VA 22161, telephone: (703) 487-4650 or the U.S. Government Printing Office (U.S. GPO, 710 North Capitol St., NW., Washington, DC 20401, telephone: (202) 783-3238 (40 CFR 761.3) **[Added October 1998].**

- *Target Housing* - any housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless any child who is less than 6 yr of age resides or is expected to reside in such housing) or any zero-bedroom dwelling (40 CFR 745.103 and 40 CFR 745.223).

- *TSCA PCB Coordinated Approval* - the process used to recognize other Federal or state waste management documents governing the storage, cleanup, treatment, and disposal of PCB wastes. It is the mechanism under TSCA for accomplishing review, coordination, and approval of PCB waste management activities which are conducted outside of the TSCA PCB approval process, but require approval under the TSCA PCB regulations at 40 CFR part 761 (40 CFR 761.3) **[Added October 1998].**

- *Unit* - a particular building, structure, or cell used to manage PCB waste (including, but not limited to, a building used for PCB waste storage, a landfill, an industrial boiler, or an incinerator) (40 CFR 761.3) **[Added October 1998].**

- *Visible Emissions* - any emissions which are visually detectable without the aid of instruments, coming from RACM or asbestos-containing waste material, or from any asbestos milling, manufacturing, or fabricating operation. This does not include condensed water vapor (40 CFR 61.141).

- *Wet Weight* - reporting chemical analysis results by including either the weight, or the volume and density, of all liquids (40 CFR 761.3) **[Added October 1998].**

- *Zero-Bedroom Dwelling* - any residential dwelling in which the living area is not separated from the sleeping area. The term includes efficiencies, studio apartments, dormitory housing, military barracks, and rentals of individual rooms in residential dwellings (40 CFR 745.103).

SPECIAL POLLUTANTS MANAGEMENT

GUIDANCE FOR CHECKLIST USERS

	REFER TO CHECKLIST ITEMS:
All Facilities	SP.1.1 through SP.1.4
PCB Management	
General	SP.5.1 through SP.5.5
Records	SP.10.1 through SP.10.3
Transformers	SP.15.1 through SP.15.11
Spills	SP.20.1 through SP.20.4
PCB Items	SP.25.1 through SP.25.4
PCBs in Research	SP.30.1
Storage	SP.35.1 through SP.35.9
Transportation	SP.40.1 and SP.40.2
Disposal	SP.45.1 through SP.45.15
Asbestos Management	
General	SP.55.1 through SP.55.4
Renovation and Demolition of Asbestos-Containing Structures	SP.60.1 through SP.60.9
Personnel Training	SP.65.1 and SP.65.2
Disposal	SP.70.1 through SP.70.4
Radon Gas	SP.80.1 through SP.80.3
Environmental Noise	SP.85.1
LBP Management	
General	SP.95.1
Notification Requirements	SP.100.1 and SP.100.4
Training Requirements	SP.105.1
Work Practice Standards	SP.110.1 through SP.110.4

Records To Review

- Inspection, storage, maintenance, and disposal records for PCBs or PCB Items
- PCB Equipment inventory and sampling results
- Correspondence with regulatory agencies concerning PCB noncompliance situations
- Records of asbestos training program
- Asbestos survey results
- Records of onsite disposal and transportation and offsite disposal of asbestos
- Regulatory inspection reports
- Radon survey results
- Noise complaint log
- Lead based paint survey results

Physical Features To Inspect

- PCB storage areas
- Transformers
- Equipment, fluid, and other items at the facility containing PCBs
- Pipe, spray-on, duct, and troweled cementitious insulation and boiler lagging
- Ceiling and floor tiles
- Piping at hatcheries
- Power generating or other noise
- Emergency generators

COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Fish and Wildlife Management	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
SP.1 **ALL FACILITIES**	
SP.1.1. The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/ identifying information as the citation).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, interagency agreements, or equivalent state enforcement actions.
SP.1.2. FWS facilities are required to comply with state and local regulations (EO 12088, Section 1-1).	Verify that the facility is complying with state and local requirements. Verify that the facility is operating according to permits issued by the state or local agencies. (NOTE: Issues typically regulated by state and local agencies include: – definitions of PCB-contaminated – PCB storage, labeling, and disposal requirements – certification of individuals sampling and/or working with asbestos – renovation and demolition procedures – asbestos handling and disposal procedures – motor vehicle noise – construction noise – noise from shooting and firing ranges.)
SP.1.3. Facilities will meet regulatory requirements issued since the finalization of this handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).	Determine if any new regulations concerning PCBs, asbestos, and radon have been issued since the finalization of this handbook. Verify that the facility is in compliance with newly issued regulations.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
SP.1.4. FWS facilities should report all NOVs to the Region and Environmental and Facility Compliance (EFC) (MP) **[Revised June 1998].**	Determine if the facility has received an NOV relating to air quality. Verify that the NOV was reported to the Region and the EFC.

COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Fish and Wildlife Management	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
PCBs **SP.5 General**	(NOTE: 40 CFR 761 applies to all persons who manufacture, process, distribute in commerce, use, or dispose of PCBs or PCB Items. Substances that are regulated include, but are not limited to: dielectric fluids; solvents; oils; waste oils; heat transfer fluids; hydraulic fluids; paints or coatings; sludges; slurries; sediments; dredge spoils; soils; materials containing PCBs as a result of spills; and other chemical substances or combinations of substances, including impurities and byproducts and any byproduct, intermediate, or impurity manufactured at any point in a process. Requirements applicable to PCBs at concentrations < 50 ppm also apply to contaminated surfaces at PCB concentrations </= 10/100 cm^2. Requirements applicable to PCBs at concentrations > 50 ppm to < 500 ppm also apply to contaminated surfaces at PCB concentrations > 10/100 cm^2 to < 100μ^2. Requirements applicable to PCBs at concentrations >/= 500 ppm also apply to contaminated surfaces at PCB concentrations >/= 100μ^2. See also the definition for PCB Concentration Assumptions. (40 CFR 761.1(b)(1) and 761.1(b)(2)) **[Added October 1998].**)
SP.5.1. Certain records and practices are required for employees exposed to PCBs (RP, 561 FW 9.6D) **[Citation Revised June 1998].**	Verify that employees exposed to PCBs on the job are identified. Verify that such employees are provided protection and training, including the provision of protective clothing, shower facilities, and facilities for washing hands. Verify that written notification is provided to employees with exposure risk of related training programs. Verify that airborne contamination of PCBs are assessed and precautionary practices followed to protect personnel, including the wearing of respirators in most cases. Verify that medical histories are maintained and physical examination performed emphasizing liver and skin conditions for employees exposed to PCBs.
SP.5.2. Facilities that use	Determine if the facility uses or stores at any time at least 45 kg (99.4

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**

or store at any time at least 45 kg (99.4 lb) of PCBs contained in PCB Containers or one or more PCB Transformers (500 ppm or greater), or 50 or more PCB Large, High-, or Low-Voltage Capacitors are required to keep an inventory (40 CFR 761.180(a)(2)((iii) through 761.180(a)(2)(vi)).	lb) of PCBs contained in PCB Containers or one or more PCB Transformers (500 ppm or greater), or 50 or more PCB Large, High, or Low Voltage Capacitors.
	
	Verify that the facility has an inventory/record of the following:
	
	– total number (by type) of PCB Articles, PCB Article Containers, and PCB Containers placed into storage for disposal or disposed of during the calendar year
	– total weight placed into storage for disposal or disposed of during the calendar year of:
	  – PCBs in PCB Articles
	  – contents of PCB Article Container
	  – contents of PCB Containers
	  – bulk PCB Waste
	– a list of PCBs and PCB Items remaining in-service at the end of the calendar year. The total weight of any PCBs and PCB Items in containers including identification of container contents and the total number of PCB Transformers, PCB Large, High- and Low-Voltage Capacitors, and the total weight of PCBs in PCB Transformers.

SP.5.3. Storage rooms and certain equipment that contains PCBs must be marked with an M_L marking (40 CFR 761.40 and 761.45) **[Revised October 1998]**.	(NOTE: Marking format: Large PCB Mark (M_L) letters and striping, on a white or yellow background, sufficiently durable to equal or exceed the life of the PCB Article. The size shall be 15.25 cm (6 in.) on each side. If the article is too small to accommodate this size, a smaller label (M_s) may be used.) Verify that equipment containing PCBs is marked with an M_L marking that can be easily read by any person inspecting or servicing the equipment (see Appendix 8-1 for a sample of the marking): – PCB Containers with PCBs in concentrations of greater than 50 ppm – PCB Transformers (500 ppm or greater) – PCB Large High-Voltage Capacitors – equipment containing a PCB Transformer (500 ppm or greater) or a PCB Large High-Voltage Capacitor at the time of removal from service – PCB Large Low-Voltage Capacitors at the time of removal from service – electric motors using PCB coolants with a concentration of greater than 50 ppm – hydraulic systems using PCB hydraulic fluid with concentrations of greater than 50 ppm

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	– heat transfer systems (other than PCB Transformers) using PCB concentrations of greater than 50 ppm – PCB Article Containers containing any of the above – each storage area used to store PCBs and PCB Items for disposal – transport vehicles loaded with PCB Containers that contain more than 45 kg (99.4 lb) of PCBs in the liquid phase with PCB concentrations of greater than 50 ppm or one or more PCB Transformers with PCB concentrations of greater than 500 ppm are marked on each end and side – vault doors, machinery room doors, fences, hallways, or means of access, other than a manhole or grate cover, to a PCB Transformer (500 ppm or greater) – voltage regulators with a PCB concentration of >/= 500 ppm (individually) – vault doors, machinery room doors, fences, hallways, or means of access to voltage regulators with a PCB concentration >/= 500 ppm. Verify that, if one or more PCB Large High-Voltage Capacitors is installed in a protected location, such as a pole, structure, or behind a fence, the pole, structure, or fence is marked and a record or procedure identifying the PCB Capacitor is maintained by the facility. (NOTE: Marking of PCB-Contaminated Electrical Equipment (50 to 500 ppm) is not required.) Verify that PCB storage rooms are marked. Verify that all marks are placed in a position on the exterior of the PCB Items, storage units, or transport vehicles so that the marks can be easily read by any person inspecting or servicing the marked PCB Items, storage units, or transport vehicles. Verify that, after 26 April 1999, all PCB Large Low Voltage Capacitors not previously marked, are marked individually, or if one or more such Capacitors in a protected location such as on a power pole, or in a structure, or behind a fence, the pole, fence, or structure is marked. Verify that a record is maintained after 26 April 1999 of those PCB Large Low-Voltage Capacitors in a protected location. Verify that after 26 April 1999 all equipment containing a PCB Transformer or a PCB Large, High-, or Low-Voltage Capacitor are marked. (NOTE: The annual document log/inventory should contain a list of all PCB equipment at the site.)

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	(NOTE: Appendix 8-2 contains a list of manufacturers that produced PCB-contaminated dielectric fluid.)
SP.5.4. Generators, transporters, and disposers of PCB Waste are required to have an USEPA identification number (40 CFR 761.202 through 761.205) **[Revised October 1998].**	(NOTE: Some facilities are exempt from the notification requirement and do not have a specified PCB storage area as regulated by 40 CFR 761.65 and just temporarily store before they transport for disposal.) Determine if the facility is a generator, transporter, or disposer of PCB Waste. Verify that generators of PCB waste have a USEPA identification number before processing, storing, dispensing, transporting, or offering for transport PCB waste. Verify that transporters or disposers of PCB waste have a USEPA identification number. Verify that, if required, Form 7710-53, Notification of PCB Waste Activity, was filed with USEPA by 4 April 1990 and a USEPA identification number was obtained. (NOTE: When a facility has previously notified USEPA of its PCB waste handling activities using EPA Form 7710-53 and those activities change, the facility must resubmit EPA Form 7710-53 to reflect those changes no later than 30 days from when a change is made. Examples of when a PCB waste handler must renotify the Agency include, but are not limited to, the following: the company changes location of the facility; or the company had notified solely as engaging in a certain type of PCB waste handling activity and now wishes to engage in another PCB waste activity (e.g., previously only commercially stored PCB waste and now wishes to transport PCB waste).
SP.5.5. PCB Concentrations are required to be established by certain methods (40 CFR 761.2(b)) **[Added October 1998].**	Verify that PCB concentrations have been established one of the following ways: – testing the equipment – permanent label, mark, or other documentation from the manufacturer of the equipment indicating its PCB concentration at the time of manufacture – service records or other documentation indicating the PCB concentration of all fluids used in servicing the equipment since it was first manufactured. (NOTE: See the definition of PCB Concentration Assumptions for further clarification.)

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
PCB MANAGEMENT **SP.10** **Records**	(NOTE: 40 CFR 761 applies to all persons who manufacture, process, distribute in commerce, use, or dispose of PCBs or PCB Items. Substances that are regulated by this part include, but are not limited to: dielectric fluids; solvents; oils; waste oils; heat transfer fluids; hydraulic fluids; paints or coatings; sludges; slurries; sediments; dredge spoils; soils; materials containing PCBs as a result of spills; and other chemical substances or combinations of substances, including impurities and byproducts and any byproduct, intermediate, or impurity manufactured at any point in a process. Requirements applicable to PCBs at concentrations < 50 ppm also apply to contaminated surfaces at PCB concentrations </= 10/100 cm^2. Requirements applicable to PCBs at concentrations > 50 ppm to < 500 ppm also apply to contaminated surfaces at PCB concentrations > 10/100 cm^2 to < 100μ^2. Requirements applicable to PCBs at concentrations >/= 500 ppm also apply to contaminated surfaces at PCB concentrations >/= 100μ^2. See also the definition for PCB Concentration Assumptions.(40 CFR 761.1(b)(1) and 761.1(b)(2)) **[Added October 1998].**)

SP.10.1. A written annual document log must be prepared by July 1 of each calendar year, covering the previous year when at least 45 kg (99.4 lb) of PCBs contained in PCB Containers or one or more PCB Transformers (500 ppm or greater), or 50 or more PCB Large, High-, or Low-Voltage Capacitors is used or stored at any time (40 CFR 761.180(a)) **[Revised October 1998].**	Verify that the annual document log and annual records (manifests, records of inspections and cleanups, certificates of disposal) are kept for at least 3 yr after PCBs and PCB items are no longer used or stored in the listed quantities.
	
	Review the written annual document log for the following:
	
	– identification of facility
	– calendar year covered
	– manifest number for every manifest generated
	– total number (by type) of PCB Articles, PCB Article Containers, and PCB Containers placed into storage for disposal or disposed of during the calendar year
	– total weight placed into storage for disposal or disposed of during the calendar year of:
	  – PCBs in PCB Articles
	  – contents of PCB Article Container
	  – contents of PCB Containers
	  – bulk PCB Waste
	– a list of PCBs and PCB Items remaining in-service at the end of the calendar year. The total weight of any PCBs and PCB Items in containers including identification of container contents and the total number of PCB Transformers, PCB Large, High- and Low-Voltage Capacitors, and the total weight of PCBs in PCB Transformers
	– a record of each telephone call or other form of verification to

COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Fish and Wildlife Management	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
	confirm the receipt of PCB Waste transported by independent transport – the name, address, and telephone number of the person to whom the item was transferred, date of transfer, and the serial number of the item or internal identification number whenever a PCB Item, except small capacitors, with a concentration >/= 50 ppm is distributed in commerce for reuse. (NOTE: In this context, PCB Voltage Regulators will be recorded as PCB Transformers.) Verify that the annual document log contains the following for each manifest, for unmanifested waste, and for any PCBs or PCB Items received from or shipped from another facility owned or operated by the generator: – date removed from service for disposal (first date material placed in PCB Container) – date placed into transport for offsite storage/disposal – date of disposal (if known) – weight of PCB Wastes: – total bulk for PCB wastes – in each article for PCB Transformers or Capacitors – total in each container for PCB Containers – total weight of contents and of the PCB Article (in kilograms) in each PCB Article Container – serial number or other unique identification number (except for bulk wastes) – description of the contents for PCB Containers and Article Containers. Determine if the following information is provided by reviewing the annual document log: – all signed manifests generated or received during the calendar year – all CODs that have been generated or received during the calendar year.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
SP.10.2. Owners and operators of PCB chemical waste landfills shall keep records on water analysis and operational records, including burial coordinates, for 20 yr after disposal has ceased (40 CFR 761.180(d)).	Verify that proper records are being kept for the required 20 yr.
SP.10.3. Storage and disposal facilities for PCBs shall maintain specific records for 3 yr (40 CFR 761.180(f)).	Verify that facilities, which store or dispose of PCBs, collect and maintain the following records for 3 yr: – all documents, correspondence, and data that have been provided by any state or local government – all documents, correspondence, and data provided to the state or local governments by the facility – any applications and related correspondence concerning wastewater discharge permits, solid waste permits, building permits, or other permits and authorizations.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
PCB MANAGEMENT **SP.15** **Transformers**	(NOTE: 40 CFR 761 applies to all persons who manufacture, process, distribute in commerce, use, or dispose of PCBs or PCB Items. Substances that are regulated by this part include, but are not limited to: dielectric fluids; solvents; oils; waste oils; heat transfer fluids; hydraulic fluids; paints or coatings; sludges; slurries; sediments; dredge spoils; soils; materials containing PCBs as a result of spills; and other chemical substances or combinations of substances, including impurities and byproducts and any byproduct, intermediate, or impurity manufactured at any point in a process. Requirements applicable to PCBs at concentrations < 50 ppm also apply to contaminated surfaces at PCB concentrations </= 10/100 cm^2. Requirements applicable to PCBs at concentrations > 50 ppm to < 500 ppm also apply to contaminated surfaces at PCB concentrations > 10/100 cm^2 to < 100μ^2. Requirements applicable to PCBs at concentrations >/= 500 ppm also apply to contaminated surfaces at PCB concentrations >/= 100μ^2. See also the definition for PCB Concentration Assumptions (40 CFR 761.1(b)(1) and 761.1(b)(2)) **[Added October 1998].**)
SP.15.1. Facilities with transformers on their property that do not belong to FWS, should know whether or not the transformers are PCB Transformers (MP).	Determine if the facility has transformers on the property not belonging to the facility. Verify that the facility is aware of the concentration of PCBs in the transformer through either a label on the transformer or documentation from the owners of the transformer.
SP.15.2. PCB Transformers with PCBs of 500 ppm or greater that are in use or in storage for reuse shall not pose an exposure risk to food and feed (40 CFR 761.30(a)(1)(i)).	Determine if there are any PCB Transformers on the facility, in use or in storage for reuse, that pose an exposure risk to food and feed, by reviewing the inventory.
SP.15.3. PCB Transformers with concentrations of PCBs of 500 ppm or greater are subject to certain registration requirements (40 CFR 761.30(a)(1)(vi)) **[Revised October 1998].**	Verify that all PCB Transformers, including those in storage for reuse, are registered with the USEPA, National Programs Division, Office of Pollution Prevention and Toxics with the following information: – name and address – contact name and telephone number – address where transformers are located, for mobile sources such as a ship provide the name of the ship

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	– number of PCB Transformers and total weight in kilograms of PCBs contained in the transformers – whether any transformers at the location contain flammable dielectric fluid (optional) – signature of the owner, operator, or other authorized representative certifying the accuracy of the information submitted. (NOTE: A transformer owner who assumes a transformer is a PCB-Contaminated transformer, and discovers after 28 December 1998 that it is a PCB-Transformer, must register the newly-identified PCB Transformer, in writing, with the USEPA no later than 30 days after it is identified as such. This requirement does not apply to transformer owners who have previously registered with the USEPA PCB Transformers located at the same address as the transformer that they assumed to be PCB-Contaminated and later determined to be a PCB Transformer. (NOTE: A person who takes possession of a PCB Transformer after 28 December 1998 is not required to register or re-register the transformer with the USEPA.) Verify that records of each registration (e.g., a copy of the registration and the return receipt signed by USEPA) is retained with the required inspection records.
SP.15.4. Railroad transformers must not contain dielectric fluid with greater than 1000 ppm PCB and must be serviced according to specific requirements (40 CFR 761.30(b)((1)(vi), 761.30(b)(2)(ii), and 761.30(b)(2)(iii)) **[Citation Revised October 1998].**	Verify that railroad transformers do not exceed 1000 ppm PCB. Verify that servicing of a railroad transformer is only done with dielectric fluid containing less than 1000 ppm PCB. Verify that, if the coil is removed from the casing of a railroad transformer, it is refilled with dielectric fluid containing 50 ppm or less PCB. (NOTE: Dielectric fluid may be filtered through activated carbon or otherwise industrially processed for the purpose of reducing the PCB concentration in the fluid.)
SP.15.5. Combustible	Verify that all combustible materials have been removed from the area

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materials, including but not limited to paints, solvents, plastics, paper, and sawn wood, must not be stored by a PCB Transformer (40 CFR 761.30(a)(1)(viii)).	within a PCB Transformer enclosure (i.e., vault or partitioned area) and the area within 5 m [16.40 ft] of a PCB Transformer or PCB Transformer enclosure.
SP.15.6. PCB Transformers of concentrations of 500 ppm or greater in use in or near commercial buildings are subject to certain requirements (40 CFR 761.30(a)(1)(ii) through 761.30(a)(1)(v) and 761.30(a)(1)(vii)) **[Revised October 1998].**	Determine if any transformers are located in or near commercial buildings by reviewing the inventory. Verify that no network PCB Transformers with higher secondary voltages (=/> than 480 V, including 480/277 V systems) are in or near commercial buildings. Verify that network PCB Transformers with higher secondary voltages which are removed from service are either reclassified to PCB Contaminated or non-PCB status, placed into storage for disposal, or disposed. Verify that procedure/policy exists prohibiting installation of PCB Transformers that have been placed into storage for reuse or that have been removed from another location. (NOTE: Retrofilled mineral oil PCB Transformers may be installed for reclassification purposes. But, it must be tested 3 mo after installation and appropriately classified based on the results of testing the fluid within. If the PCB concentration remains at 500 ppm or >, the transformer must be retrofilled again until the transformer can be classed a non-PCB or PCB-Contaminated or removed from service.) Verify that all higher secondary voltage radial PCB transformers in use in or near commercial buildings, and lower secondary voltage network PCB Transformers are equipped with electrical protection to avoid transformer ruptures caused by high current faults (i.e., current limiting fuses). Verify that all lower secondary voltage network PCB Transformers not located in sidewalk vaults (network transformers with secondary voltages below 480 volts), in use in or near commercial buildings have been removed from service. Verify that all lower secondary voltage radial PCB Transformers are equipped with electrical protection to detect sustained high current

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	faults and provide for the complete deenergization of the transformer of the complete deenergization of the faulted phase of the transformer within several hundredths of a second. Verify that all radial PCB Transformers with higher secondary voltages (480 volts and above, including 480/277 volt systems) in use in or near commercial buildings are equipped with protection to avoid transformer ruptures caused by sustained low current faults. Verify that PCB Transformers in use in or near commercial buildings are registered with the building's owner and includes the following information: – specific location – principal constituent of the dielectric fluid – the type of transformer installation (e.g., 208/120 volt network, 208/120 volt radial).
SP.15.7. PCB Transformers are required to be properly serviced (40 CFR 761.30(a)(2)).	Verify that servicing activities are properly conducted as follows: – transformers classified as PCB-Contaminated Electrical Equipment (50 to 500 ppm PCB) are only serviced with dielectric fluid containing less than 500 ppm PCB – the transformer coil is not removed during servicing of PCB Transformers with PCB concentrations of 500 ppm or greater – PCBs removed during servicing are captured and are either reused as dielectric fluid or disposed of properly – the PCBs from a PCB Transformer with PCB concentrations of 500 ppm or greater are not mixed with or added to dielectric fluid from PCB-Contaminated Electrical Equipment (50 to 500 ppm PCB) – dielectric fluids containing less than 500 ppm PCB that are mixed with fluids containing 500 ppm or greater are not used as dielectric fluid in any transformers classified as PCB-Contaminated Electrical Equipment (50 to 500 ppm PCB). (NOTE: PCB Transformers may be serviced with dielectric fluid at any concentration.)
SP.15.8. Inspections must be performed once	Verify that applicable transformers in use or stored for reuse are

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every 3 mo for all in-service PCB Transformers with greater than 500 ppm PCB (40 CFR 761.30(a)(1)(ix) and 761.30(a)(1)(xii) through 761.30(a)(1)(xiv)) **[Revised October 1998].**	inspected at least once every 3 mo by reviewing inspection records. Determine whether any PCB Transformers have been leaking. Verify that the following information is recorded for each PCB Transformer inspection: – location of transformer – dates of each visual inspection – date when any leak was discovered – name of person conducting inspection – location and estimate of the dielectric fluid quantity for any leaks – data and description of any cleanup, containment, or repair performed – results of any daily inspections for transformers with uncorrected active leaks – registration of the PCB Transformer – records of transfer of ownership. (NOTE: Reduced visual inspections of at least once every 12 mo is allowed for PCB Transformers with impervious, undrained secondary containment capacity of 100 percent of dielectric fluid and for PCB Transformers tested and found to contain less than 60,000 ppm PCBs.) (NOTE: Increased visual inspections of once a week are required for any PCB Transformer in use or stored for reuse that poses an exposure risk to food or feed.) Verify that records of inspection and maintenance are kept for 3 yr after disposal.
SP.15.9. PCB Transformers with PCB concentrations of 500 ppm or greater found to be leaking during an inspection must be repaired or replaced to eliminate the source of the leak (40 CFR 761.30(a)(1)(x)).	Determine if cleanup and/or containment of released PCBs has been initiated within 48 h of its detection or as soon as possible. Verify that leaking PCB Transformers are inspected daily. Determine if plans exist to repair or replace transformers to eliminate the source of the leak. Verify that cleaned up material is disposed of according to appropriate requirements.
SP.15.10. When a PCB Transformer with	Determine if any PCB Transformers have been involved in any incident where sufficient heat and/or pressure was generated to result in the

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concentrations of PCBs 500 ppm or greater is involved in a fire, the facility is required to immediately report the incident to the NRC (40 CFR 761.30(a)(1)(xi)).	violent or nonviolent rupture of a PCB Transformer and the release of PCBs. Verify that the NRC was notified and the following measures were taken: – floor drains were blocked – water runoff was contained.
SP.15.11. Mineral oil transformers which are tested and found to be contaminated with 500 PPM or greater must meet specific requirements (40 CFR 761.30(a)(1)(xv) **[Added October 1998].**	Verify that mineral oil transformers that are tested and found to be contaminated with 500 PPM PCB or greater meet all the storage and handling requirements of 40 CFR 761. Verify that the following additional steps are taken: – fire-related incidents are reported immediately after discovery – mark the transformer within 7 days after discovery – mark the vault door, machinery room door, fence, hallway, or other means of access to the PCB Transformer within 7 days after discovery – register the transformer with the building owner within 7 days.

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PCB MANAGEMENT **SP.20** **Spills**	(NOTE: 40 CFR 761 applies to all persons who manufacture, process, distribute in commerce, use, or dispose of PCBs or PCB Items. Substances that are regulated by this part include, but are not limited to: dielectric fluids; solvents; oils; waste oils; heat transfer fluids; hydraulic fluids; paints or coatings; sludges; slurries; sediments; dredge spoils; soils; materials containing PCBs as a result of spills; and other chemical substances or combinations of substances, including impurities and byproducts and any byproduct, intermediate, or impurity manufactured at any point in a process. Requirements applicable to PCBs at concentrations < 50 ppm also apply to contaminated surfaces at PCB concentrations </= 10/100 cm^2. Requirements applicable to PCBs at concentrations > 50 ppm to < 500 ppm also apply to contaminated surfaces at PCB concentrations > 10/100 cm^2 to < 100μ^2. Requirements applicable to PCBs at concentrations >/= 500 ppm also apply to contaminated surfaces at PCB concentrations >/= 100μ^2. See also the definition for PCB Concentration Assumptions (40 CFR 761.1(b)(1) and 761.1(b)(2)) **[Added October 1998]**.)
SP.20.1. Spills of 10 lb or more of PCBs of concentrations of 50 ppm or greater are required to be reported (40 CFR 761.50(a)(4), 761.120(a)(1), 761.123(d)(2), and 761.125(a)) **[Revised October 1998]**.	Verify that, when a spill of 10 lb or more directly contaminates surface water, sewers, or drinking water, the Regional USEPA office is notified within 24 h after discovery of the spill and acts on the guidance given by the USEPA. Verify that, if a spill of 10 lb or more directly contaminates grazing land or a vegetable garden, the USEPA regional office is notified within 24 h after discovery and begins cleanup of the spill. Verify that when a spill of 10 lb or more occurs that does not directly contaminate surface waters, sewers, drinking water supplies, grazing land, or a vegetable garden, the USEPA regional office is notified within 24 h after discovery of the spill and begins decontamination of the spill area. (NOTE: Spills of greater than 1 lb by weight of PCBs must be reported to the NRC under 40 CFR 302.1 through 302.6, see appropriate checklist items in Section 3, Hazardous Materials Management.) (NOTE: Spills and other uncontrolled discharges of PCBs at concentrations of >/= 50 ppm constitute the disposal of PCBs.)

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SP.20.2. All notifications of PCB spills to the NRC or USEPA are to be coordinates, when feasible, with the Regional Spill Coordinator and/or Environmental Coordinator (RP, 561 FW 9.7B) **[Citation Revised June 1998].**	Verify that all notifications of PCB spills to the NRC or USEPA are coordinates, when feasible, with the Regional Spill Coordinator and/or Environmental Coordinator prior to the actual notification.
SP.20.3. Cleanup of low concentration spills of less than 1 lb of PCBs (less than 270 gal of untested mineral oil) must be done according to specific requirements (40 CFR 761.120(a)(2), 761.120(b), 761.120(c), and 761.125(b)).	Verify that solid surfaces are double washed/rinsed and all indoor, residential surfaces other than vault areas are cleaned to 10 micrograms/100 cm^2 by standard commercial wipe tests. Verify that all soil within the spill area (visible traces of soil and buffer of 1 lateral foot around the visible traces) is excavated and the ground restored to its original status by backfilling with clean soil (soil with less than 1 ppm PCB). Verify that the above cleanup requirements are done within 48 h after identifying the spill unless an emergency or adverse weather delays the process. Verify that the cleanup is documented with records and certification of decontamination and the records are maintained for 5 yr. (NOTE: The final numerical cleanup standards do not apply to spills directly into surface waters, drinking water, sewers, grazing lands, and vegetable garden.) (NOTE: The USEPA may impose more stringent or less stringent cleanup requirements on a case by case basis depending on conditions such as possibility of groundwater contamination.)

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SP.20.4. Cleanup of high-concentration spills and low concentration spills involving 1 lb or more of PCBs by weight (270 gal or more of untested mineral oil) must be done according to specific requirements (40 CFR 761.120(a)(2), 761.120 (b), 761.120(c), and 761.125(c)).	Verify that the following actions are taken within 24 h (or within 48 h for PCB Transformer with PCB concentrations of greater than 500 ppm) of discovery of the spill: – notification to the USEPA regional office and the NRC – the area of the spill is cordoned off or otherwise identified to include the area with visible traces of the spill and a 3-ft buffer zone. If there are no visible traces, the area of the spill may be estimated. – clearly visible signs are placed advising persons to avoid the area – the area of visible contamination is recorded and documented, identifying the extent and center of the spill – cleanup of visible traces of the fluid from hard surfaces is initiated – removal of all visible traces of the spill on soil and other media such as gravel, sand, etc., is started. Verify that, if the spill occurs in an outdoor substation, the following is done: – contaminated solid surfaces are cleaned to a PCB concentration of 100 micrograms/cm^2 (as measured by standard wipe tests) – soil contaminated by the spill is cleaned to either 25 ppm PCBs by weight or 50 ppm PCBs by choice of the facility if a label or notice is placed in the area indicating the level of cleanup – post-cleanup sampling is done. Verify that, if the spill occurs in a restricted access area other than an outdoor substation, the following is done: – high-contact solid surfaces are cleaned to 10 micrograms/100 cm^2 (as measured by standard wipe tests) – low-contact, indoor, impervious solid surfaces are decontaminated to 10 micrograms/100 cm^2 – low contact, indoor, nonimpervious surfaces are cleaned to either 10 micrograms or 100 micrograms/100 cm^2 and encapsulated at the option of the facility – low-contact, outdoor surfaces (both impervious and nonimpervious) are cleaned to 100 micrograms/100 cm^2 – soil contaminated by the spill is cleaned to 25 ppm PCBs by weight – post-cleanup sampling is done. Verify that spills in nonrestricted access locations are decontaminated

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	as follows: – furnishings, toys, and other easily replaceable household items are disposed of and replaced – indoor solid surfaces and high-contact outdoor solid surfaces are cleaned to 10 micrograms/100 cm^2 (as measured by standard wipe tests) – indoor vault areas and low-contact, outdoor, impervious solid surfaces are decontaminated to 10 micrograms/100 cm^2 – at the option of the facility, low-contact, outdoor, nonimpervious solid surfaces are cleaned to either 10 or 100 micrograms/100 cm^2 and encapsulated – soil is decontaminated to 10 ppm PCBs by weight provided that the soil is excavated to a minimum depth of 10 in. and replaced with clean soil – post-cleanup sampling is done. Verify that records documenting all cleanup and decontamination are maintained for 5 yr. (NOTE: The occurrence/discovery of the spill on the weekend or overtime costs are not considered acceptable reasons to delay response.) (NOTE: The final numerical cleanup standards do not apply to spills directly into surface waters, drinking water, sewers, grazing lands, and vegetable gardens.) (NOTE: The USEPA may impose more stringent or less stringent cleanup requirements on a case by case basis depending on conditions such as possibility of groundwater contamination.)

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PCB MANAGEMENT **SP.25** **PCB Items**	(NOTE: 40 CFR 761 applies to all persons who manufacture, process, distribute in commerce, use, or dispose of PCBs or PCB Items. Substances that are regulated by this part include, but are not limited to: dielectric fluids; solvents; oils; waste oils; heat transfer fluids; hydraulic fluids; paints or coatings; sludges; slurries; sediments; dredge spoils; soils; materials containing PCBs as a result of spills; and other chemical substances or combinations of substances, including impurities and byproducts and any byproduct, intermediate, or impurity manufactured at any point in a process. Requirements applicable to PCBs at concentrations < 50 ppm also apply to contaminated surfaces at PCB concentrations </= 10/100 cm^2. Requirements applicable to PCBs at concentrations > 50 ppm to < 500 ppm also apply to contaminated surfaces at PCB concentrations > 10/100 cm^2 to < 100μ^2. Requirements applicable to PCBs at concentrations >/= 500 ppm also apply to contaminated surfaces at PCB concentrations >/= 100μ^2. See also the definition for PCB Concentration Assumptions (40 CFR 761.1(b)(1) and 761.1(b)(2)) **[Added October 1998]**.)
SP.25.1. PCBs may be used in heat transfer and hydraulic systems in a manner other than a totally enclosed manner at concentrations less than 50 ppm if specific requirements are met (40 CFR 761.30(d) through 761.30(e)) **[Revised October 1998]**.	Determine if testing has been conducted to demonstrate that heat transfer or hydraulic systems that formerly contained PCBs at a concentration greater than 50 ppm now contain less than 50 ppm PCB. Verify that no fluid containing greater than 50 ppm PCB is added to heat transfer or hydraulic systems.
SP.25.2. Electromagnets, switches, and voltage regulators may contain PCBs at any concentrations if certain requirements are met (40 CFR 761.30 (h)) **[Revised October 1998]**.	Verify that no electromagnets are used or stored that contain greater than 500 ppm PCB and pose an exposure risk to food or feed. Verify that the use and storage for reuse of voltage regulators that contain 1.36 kg (3 lb) or more of dielectric fluid with a PCB concentration of >/= 500 ppm meet the following: – mark the regulator as required in 40 CFR 761.40 (see checklist item T1.10.2.) – report any fire-related incidents immediately to the NRC – conduct inspections as applicable to PCB Transformers – comply with the recordkeeping and reporting requirements of 40 CFR 761.180.

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	Verify that electromagnets, switches, and voltage regulators that contain 500 ppm or greater PCB are not rebuilt and no removal or reworking of internal components is done during servicing. Verify that electromagnets, switches, and voltage regulators that contain between 50 and 500 ppm PCB (PCB-contaminated Electrical Equipment) are only serviced with dielectric fluid that contains less than 500 ppm PCB. Verify that PCBs removed or captured are either reused as dielectric fluid or disposed of properly. Verify that dielectric fluid containing a mixture of fluids with less than 500 ppm PCBs are not used as dielectric fluid in any electrical equipment.
SP.25.3. Capacitors may contain PCBs at any concentration subject to certain requirements (40 CFR 761.30 (l)).	Verify that all PCB Large, High- and Low-Voltage Capacitors that pose an exposure risk to food and feed have been removed. Verify that all PCB Large, High- and Low-Voltage Capacitors are in use only in restricted-access electrical substations, or in a contained and restricted-access indoor area. Verify that capacitors have been free from leaks of dielectric PCBs.
SP.25.4. Circuit breakers, reclosers, and cable may contain PCBs at any concentration for remainder of their useful lives subject to certain conditions (40 CFR 761.30 (m)).	Verify that any circuit breakers, reclosers, and cables used at the facility are serviced using only dielectric fluid which contains less than 50 ppm PCB and have been free from leaks.

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PCB MANAGEMENT **SP.30** **PCBs in Research**	(NOTE: 40 CFR 761 applies to all persons who manufacture, process, distribute in commerce, use, or dispose of PCBs or PCB Items. Substances that are regulated by this part include, but are not limited to: dielectric fluids; solvents; oils; waste oils; heat transfer fluids; hydraulic fluids; paints or coatings; sludges; slurries; sediments; dredge spoils; soils; materials containing PCBs as a result of spills; and other chemical substances or combinations of substances, including impurities and byproducts and any byproduct, intermediate, or impurity manufactured at any point in a process. Requirements applicable to PCBs at concentrations < 50 ppm also apply to contaminated surfaces at PCB concentrations </= 10/100 cm^2. Requirements applicable to PCBs at concentrations > 50 ppm to < 500 ppm also apply to contaminated surfaces at PCB concentrations > 10/100 cm^2 to < 100μ^2. Requirements applicable to PCBs at concentrations >/= 500 ppm also apply to contaminated surfaces at PCB concentrations >/= 100μ^2. See also the definition for PCB Concentration Assumptions (40 CFR 761.1(b)(1) and 761.1(b)(2)) **[Added October 1998]**.)
SP.30.1. The use of PCBs in research is subject to certain conditions (40 CFR 761.30(j)) **[Revised October 1998]**.	Verify that, if PCBs are used for research and development in a manner other than a totally enclosed manner, the following are met: – the PCBs and PCBs in analytical reference samples derived from waste materials are obtained from authorized sources – storage of all PCB wastes resulting from R&D activities is in compliance with 40 CFR 761.65(b) and disposed of in accordance with 40 CFR 761.64 – manifests are used for all PCB wastes being transported from the R&D facility to a commercial storer and/or disposal faculty – there is no manufacture, processing, or distribution without a TSCA exemption to do so. (NOTE: No manifests are required if the residuals or unused analytical reference samples or PCB waste material are returned either to the physical location where the samples were collected or a location where other regulated PCBs from the physical location where the samples were collected are being stored for disposal.) (NOTE: Authorized R&D activities include, but are not limited to: the chemical analysis of PCBs, including analyses to determine PCB concentration; studies of environmental transport processes; studies of biochemical transport processes; studies of effects of PCBs on the environments; and studies of health effects. Authorized R&D

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	activities do not include research, development, or analysis for the development of any PCB product.)

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PCB MANAGEMENT **SP.35** **Storage**	(NOTE: 40 CFR 761 applies to all persons who manufacture, process, distribute in commerce, use, or dispose of PCBs or PCB Items. Substances that are regulated by this part include, but are not limited to: dielectric fluids; solvents; oils; waste oils; heat transfer fluids; hydraulic fluids; paints or coatings; sludges; slurries; sediments; dredge spoils; soils; materials containing PCBs as a result of spills; and other chemical substances or combinations of substances, including impurities and byproducts and any byproduct, intermediate, or impurity manufactured at any point in a process. Requirements applicable to PCBs at concentrations < 50 ppm also apply to contaminated surfaces at PCB concentrations </= 10/100 cm^2. Requirements applicable to PCBs at concentrations > 50 ppm to < 500 ppm also apply to contaminated surfaces at PCB concentrations > 10/100 cm^2 to < 100μ^2. Requirements applicable to PCBs at concentrations >/= 500 ppm also apply to contaminated surfaces at PCB concentrations >/= 100μ^2. See also the definition for PCB Concentration Assumptions (40 CFR 761.1(b)(1) and 761.1(b)(2)) **[Added October 1998]**.)
SP.35.1. PCBs and PCB Items at concentrations of 50 ppm or more that are to be stored before disposal must be stored in a facility meeting specific structural requirements (40 CFR 761.65(a) through 761.65(b)(1)) **[Revised October 1998]**.	Verify that the following provisions are present by inspecting the PCB storage area: – the roof and walls of the building in which the PCBs are stored are constructed so as to exclude rainfall from contacting PCBs and PCB items – an adequate floor that has continuous curbing with a minimum 6 in high curb. The curbing will provide a containment volume equal to at least two times the internal volume of the largest PCB Article or PCB Container or 25% of the total internal volume of all PCB Articles or PCB Containers stored there, whichever is greater. – drains, valves, floor drains, expansion joints, sewer lines or other openings that would allow liquids to flow from the curbed area are not present – floors and curbing are constructed of Portland cement, concrete, or a continuous, smooth, nonporous surface that prevents or minimizes penetration of the PCBs – location is not below a 100-yr flood water elevation – the storage area is marked with the label in Appendix 8-1. (NOTE: PCB/radioactive wastes are not required to be stored in an

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	area with a minimum 6 in. high curbing. However, the floor and curbing must still provide a containment volume equal to at least two times the internal volume of the largest PCB Container or 25 percent of the total internal volume of all PCB Containers stored there, whichever is greater.) Verify that PCB waste is removed from storage and disposed of within 1 yr from the date it was determined to be PCB waste and the decision was made to dispose of it. (NOTE: This date is the date of removal from service for disposal and the point at which the 1-yr time frame for disposal begins. PCB/radioactive waste removed from service for disposal is exempt from the 1-yr time limit provided a written record documents all attempts to secure disposal and the written record is available for review and the waste is managed in accordance with all other applicable Federal, state, and local laws and regulations for the management of radioactive material.) (NOTE: Any person storing PCB waste that is subject to the 1-yr time limit may provide written notification to the USEPA Regional Administrator for the Region in which the PCB waste is stored that their continuing attempts to dispose of or secure disposal for their waste within the 1-yr time limit have been unsuccessful. Upon receipt of the notice by the USEPA Regional Administrator, the time for disposal is automatically extended for 1 additional year (2 years total) if the following conditions are met: – the notification is received by the USEPA Regional Administrator at least 30 days before the initial 1-yr time limit expires and the notice identifies the storer, the types, volumes, and locations of the waste and the reasons for failure to meet the initial 1-yr time limit – a written record documenting all continuing attempts to secure disposal is maintained until the waste is disposed of – the written record required is available for inspection or submission if requested by USEPA – continuing attempts to secure disposal were initiated within 270 days after the time the waste was first subject to the 1-yr time limit requirement. Failure to initiate and continue attempts to secure disposal throughout the total time the waste is in storage shall automatically disqualify the notifier from receiving an automatic extension under this section.)
SP.35.2. PCBs and PCB	Verify that if PCBs and PCB Items designated for disposal are stored in

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Items may also be stored in other areas that do not comply with the storage area requirements when specific parameters are met (40 CFR 761.65(b)(2) and 761.65(c)(1)) **[Revised October 1998].**	a storage unit that is not approved and does not meet design requirements, the unit meets one of the following conditions: – it is permitted to manage hazardous waste in containers and spills of PCBs are properly cleaned up – it qualifies for interim status under section 3005 of RCRA to manage hazardous waste in containers, meets the requirements for containment at 40 CFR. 264.175, and spills of PCBs are properly cleaned up – it is permitted by a state authorized under section 3006 of RCRA to manage hazardous waste in containers, and spills of PCBs are properly cleaned up – it is approved or otherwise regulated pursuant to a State PCB waste management program no less stringent in protection of health or the environment than the applicable TSCA requirements – it is subject to a TSCA Coordinated Approval that includes provisions for storage of PCBs – it has a TSCA PCB waste management approval that includes provisions for storage. Verify that only the following PCB Items are stored and a notation is attached to the PCB Item or Container indicating the date the item was removed from service for storage in noncompliant storage areas used as a temporary 30-day storage area: – nonleaking PCB Articles and PCB Equipment – leaking PCB Articles and PCB Equipment placed in a nonleaking PCB Container that contains sufficient sorbent material to absorb liquid contained on the PCB Article or equipment – PCB Containers in which nonliquid PCBs have been placed – PCB Containers containing liquid PCBs at a concentration >/= 50 provided Spill, Prevention, Control, and Countermeasure (SPCC) plan has been prepared for the temporary storage area and the liquid PCB waste is in DOT authorized packaging or stationary bulk storage tanks.
SP.35.3. Nonleaking and structurally undamaged	Determine if available unfilled storage space in the storage area is equal to at least 10 percent of the volume of capacitors and electrical

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PCB Large, High- Voltage Capacitors and PCB-Contaminated Electric Equipment that have not been drained of free flowing dielectric fluid may be stored on pal lets next to a storage area that complies with the storage area requirements (40 CFR 761.65(c)(2)).	equipment stored outside. Verify that capacitors and equipment stored outside the storage facility are on pallets and inspected at least weekly.
SP.35.4. Specific operational procedures are required at PCB storage units (40 CFR 761.65(c)(4), 761.65(c)(5), and 761.65(c)(8)) **[Revised October 1998].**	Verify that the following practices are conducted at any area where PCBs or PCB Items are stored: – movable equipment used for handling PCBs and PCB Items that directly contact PCBs is not removed from storage unit unless decontaminated – inspections for leaks of all PCB Items in storage are done at least once every 30 days – any leaking PCB Items and their contents are immediately transferred to properly marked non-leaking containers and the spilled or leaked materials are immediately cleaned up and any spill absorbent material properly disposed – PCB Items are marked with the date when they are removed from service for disposal – PCB Items are positioned so that they can be located by the marked date – stationary storage containers for liquid PCBs have a record that includes quantity and date of each batch added to the container or removed from the container.
SP.35.5. Containers used for the storage of PCBs must comply with the shipping container specification of the DOT (40 CFR 761.65(c)(6) and 761.65(c)(7)) **[Revised October 1998].**	Verify that any container used for the storage of liquid or non-liquid PCB waste is in accordance with the requirements in the DOT Hazardous Materials Regulations (HMR) at 49 CFR parts 171 through 180. Verify that PCB wastes not subject to the HMR (i.e., PCB wastes at concentrations of <20 ppm or <1 pound of PCBs regardless of concentration) are packaged in accordance with Packaging Group III, unless other hazards associated with the PCB waste cause it to require packaging in accordance with Packaging Groups I or II. (NOTE: For purposes of describing PCB waste not subject to DOT's HMR on a manifest, one may use the term "Non-DOT Regulated

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	PCBs.") Verify that, if containers other than those meeting HMR performance standards are used for storage of PCB/radioactive waste, the following requirements are met: – containers are non-leaking – containers are designed to prevent the buildup of liquids if such containers are stored in an area meeting containment requirements as well as all other applicable State or Federal regulations or requirements for control of radioactive materials. – containers meet all regulations and requirements pertaining to nuclear criticality safety. (NOTE: Acceptable container materials currently include polyethylene and stainless steel provided that the container material is chemically compatible with the wastes being stored. Other containers may be used to store both liquid and non-liquid PCB/radioactive wastes if the users are able to demonstrate, to the appropriate Regional Administrator and other appropriate regulatory authorities (i.e., Nuclear Regulatory Commission, Department of Energy, or the Department of Transportation), that the use of such containers is protective of health and the environment as well as public health and safety.) (NOTE: The following DOT-specified containers that conform to the requirements of 49 CFR, chapter I, subchapter C in effect on 30 September 1991, may be used for storage and transportation activities that are not subject to DOT regulation, and may be used on a transitional basis as permitted at 49 CFR 171.14. For liquid PCBs: Specification 5 container without removable head, Specification 5B container without removable head, Specification 6D overpack with Specification 2S or 2SL polyethylene containers, or Specification 17E container. For non-liquid PCBs: Specification 5 container, Specification 5B container, or Specification 17C container.) (NOTE: Stationary storage containers for liquid PCBs can be larger than those specified in DOT Specs 5, 5B, or 17C may be used for nonliquid PCBs when such containers will provide as much protection against leaking and exposure to the environment as the DOT-specified containers.) Verify that, if the containers larger than DOT-approved containers are used, an SPCC plan covering the containers storing PCBs has been

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	prepared.
SP.35.6. Commercial storers of PCB Waste must have final storage approval (40 CFR 761.65(d)).	Determine if the facility is a commercial storer of PCB or has a commercial storer of PCB Waste at the facility. Verify that the commercial storer has final storage approval from the USEPA Regional Administrator for PCB Waste. (NOTE: Commercial storers were required to file for final storage approval by 2 August 1990. After filing for final approval, they will operate under interim approval until the final decision is made on approval.) (NOTE: The following facilities may be exempt from this requirements for storage approval: – storage areas at transfer facilities unless the PCB Waste is stored at the facility for more than 10 consecutive days between destinations – storage areas at RCRA-permitted facilities if the facility proves to the Regional Administrator that the facility's existing RCRA closure plan substantially meets the requirements for a TSCA closure plan – storage areas ancillary to a TSCA approved disposal facility if the disposal approval contain an expiration date and the current disposal approval's closure and financial responsibility conditions specifically extend to storage areas ancillary to disposal.)
SP.35.7. PCB Articles may be stored for reuse if specific parameters are met (40 CFR 761.35) **[Added October 1998].**	Verify that PCB Articles are not stored in an area that is not designed, constructed, and operated in compliance with 40 CFR 761.65(b) for more than 5 yr after the date the Article was originally removed from use or 5 yr after 25 August 1998, whichever is later. Verify that, when storing PCB Articles in a noncompliant area, the following are met: – all applicable use and marking requirements are met – records including the following are kept, starting at the time the PCB Article is removed from use or 28 August 1998: – the date of removal or 28 August 1998 if the removal date is not known – projected location and future use of the Article – the date the PCB Article is scheduled for repair, if applicable. (NOTE: Storage for reuse may be done in a noncompliant area for more than 5 yr if written approval has been received from the USEPA

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	Regional Administrator.) (NOTE: A PCB Article may be stored for reuse indefinitely in: – a unit in compliance with 40 CFR 761.65(b) – a unit permitted to manage hazardous waste containers.)
SP.35.8. PCB household waste must be stored according to specific parameters (40 CFR 761.63) **[Added October 1998].**	Verify that PCB household waste stored in a unit regulated for storage of PCB waste is not commingled with PCB waste.
SP.35.9. The storage of bulk PCB remediation waste or PCB bulk product waste must meet certain requirements (40 CFR 761.65(c)(9)) **[Added October 1998].**	Verify that Bulk PCB remediation waste or PCB bulk product waste is not stored at the clean-up site or site of generation for more than 180 days. Verify that the following conditions are met: – the waste is placed in a pile designed and operated to control dispersal of the waste by wind, where necessary, by means other than wetting. – the waste does not generate leachate through decomposition or other reactions. – the storage site has: – a liner that is designed, constructed, and installed to prevent any migration of wastes off or through the liner into the adjacent subsurface soil, groundwater, or surface water at any time during the active life (including the closure period) of the storage site – a liner constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation – a liner placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift – a liner installed to cover all surrounding earth likely to be in contact with the waste – an appropriate cover that covers all of the stored waste likely to be contacted by precipitation, and is secured so as not to be functionally disabled by winds expected under normal

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	seasonal meteorological conditions at the storage site – a run-on control system designed, constructed, operated, and maintained such that: – it prevents flow onto the stored waste during peak discharge from at least a 25-yr storm – it collects and controls at least the water volume resulting from a 24-h, 25-yr storm. Verify that collection and holding facilities (e.g., tanks or basins) are emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

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PCB MANAGEMENT **SP.40** **Transportation**	(NOTE: 40 CFR 761 applies to all persons who manufacture, process, distribute in commerce, use, or dispose of PCBs or PCB Items. Substances that are regulated by this part include, but are not limited to: dielectric fluids; solvents; oils; waste oils; heat transfer fluids; hydraulic fluids; paints or coatings; sludges; slurries; sediments; dredge spoils; soils; materials containing PCBs as a result of spills; and other chemical substances or combinations of substances, including impurities and byproducts and any byproduct, intermediate, or impurity manufactured at any point in a process. Requirements applicable to PCBs at concentrations < 50 ppm also apply to contaminated surfaces at PCB concentrations </= 10/100 cm^2. Requirements applicable to PCBs at concentrations > 50 ppm to < 500 ppm also apply to contaminated surfaces at PCB concentrations > 10/100 cm^2 to < 100μ^2. Requirements applicable to PCBs at concentrations >/= 500 ppm also apply to contaminated surfaces at PCB concentrations >/= 100μ^2. See also the definition for PCB Concentration Assumptions (40 CFR 761.1(b)(1) and 761.1(b)(2)) **[Added October 1998].**)
SP.40.1. A generator who offers a PCB waste for transport for commercial offsite storage or offsite disposal must prepare a manifest (40 CFR 761.207 through 761.210) **[Revised October 1998].**	(NOTE: This applies to PCB wastes as defined in 40 CFR 761.3. This includes PCB wastes with PCB concentrations below 50 ppm where the PCB concentration below 50 ppm was the result of dilution. But there is no manifest requirement for material currently below 50 ppm that derives from pre-18 April 1978 spills of any concentration, pre-2 July 1979 spills of < 500 ppm PCBs, or decontaminated materials.) Verify that a manifest has been prepared when needed and that it contains (use USEPA Form 8700-22): – the identity of PCB Waste, the earliest date of removal from service for disposal and the weight in kilograms of the waste for bulk load of PCBs – the unique identifying number of each PCB Article Container or PCB Container, the date of removal from service, type of waste, and the weight of PCB waste contained – the serial number if available or other identification for each PCB Article not in a PCB Container or PCB Article Container, the date of removal from service for disposal, and weight in kilograms of the PCB waste in each PCB Article. Verify that sufficient copies are prepared to supply the generator, the initial transporter, each subsequent transporter, and the owner or operator of the disposal facility with one legible copy each for their records, and one additional copy to be signed and returned to the generator by the owner or operator of the disposal facility.

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	Verify that the generator maintains a copy of the signed manifest for at least 3 yr after receipt of waste by the initial transporter.
SP.40.2. If the generator does not receive a signed copy of the manifest within 35 days of the date the waste was accepted by the initial transporter, the generator is required to immediately contact the transporter and/or owner or operator of the designated facility to determine the status of the PCB Waste (40 CFR 761.215(a) and 761.215(b)) **[Revised October 1998].**	Verify that a procedure is in place so that if the generator does not receive a copy within 35 days of the date the waste was accepted by the initial transporter, the transporter and/or designated facility is immediately contacted. Verify that, if the generator does not receive a copy within 45 days of the date the waste was accepted by the initial transporter, an Exception Report is filed with the USEPA no later than 45 days from the date on which the generators should have received the manifest. Verify that the Exception Report contains the following information: – a legible copy of the manifest for which the generator does not have confirmation of delivery – a cover letter signed by the generator or his authorized representative explaining the efforts taken to locate the PCB Waste and the results of those efforts.

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PCB MANAGEMENT **SP.45** **Disposal**	(NOTE: 40 CFR 761 applies to all persons who manufacture, process, distribute in commerce, use, or dispose of PCBs or PCB Items. Substances that are regulated by this part include, but are not limited to: dielectric fluids; solvents; oils; waste oils; heat transfer fluids; hydraulic fluids; paints or coatings; sludges; slurries; sediments; dredge spoils; soils; materials containing PCBs as a result of spills; and other chemical substances or combinations of substances, including impurities and byproducts and any byproduct, intermediate, or impurity manufactured at any point in a process. Requirements applicable to PCBs at concentrations < 50 ppm also apply to contaminated surfaces at PCB concentrations </= 10/100 cm^2. Requirements applicable to PCBs at concentrations > 50 ppm to < 500 ppm also apply to contaminated surfaces at PCB concentrations > 10/100 cm^2 to < 100μ^2. Requirements applicable to PCBs at concentrations >/= 500 ppm also apply to contaminated surfaces at PCB concentrations >/= 100μ^2. See also the definition for PCB Concentration Assumptions (40 CFR 761.1(b)(1) and 761.1(b)(2)) **[Added October 1998].**) (NOTE: For information on the disposal of additional types of PCB wastes, see Appendix 8-3 **[Added October 1998].**)
SP.45.1. For each shipment of manifested PCB waste that a disposal facility accepts, the owner or operator of the disposal facility must prepare a COD (40 CFR 761.218) **[Revised October 1998].**	Verify that a COD has been prepared containing the following information: – the identity of the disposal facility by name, address, and USEPA identification number – the identity of the PCB Waste affected by the COD including reference to the manifest number for the shipment – a certification as defined in 40 CFR 761.3. Verify that a copy of the COD was: – sent to the generator identified on the manifest within 30 days of the date that disposal of the PCB waste was completed unless another timeframe is agreed to – retained with the annual report.
SP.45.2. Checklist item deleted. **[Deleted October 1998].**	Checklist item deleted due to 29 June 1998 regulatory revision.
SP.45.3. Except in	Verify that, except as identified below, PCB liquids at concentration

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specific instances, PCB liquids at concentrations >/= 50 ppm must be disposed of in an approved incinerator (40 CFR 761.60(a)) **[Revised October 1998].**	>/= 50 ppm are disposed of in an incinerator that meets the requirements of 40 CFR 761.70. Verify that, if mineral oil dielectric fluid with PCB concentrations at >/= 50 ppm and < 500 ppm are disposed of in a high efficiency boiler, the boiler meets the requirements in 40 CFR 761.71(a). Verify that, if liquids with PCB concentrations at >/= 50 ppm and < 500 ppm other than mineral oil dielectric fluid are disposed of in a high efficiency boiler, the boiler meets the requirements in 40 CFR 761.71(b). Verify that liquids from incidental sources, such as precipitation, condensation, leachate, or load separation with PCB concentrations at >/= 50 ppm and < 500 ppm, are associated with PCB Articles or non-liquid PCB wastes are disposed of in a chemical waste landfill that complies with 40 CFR 761.75 and: – disposal does not violate land disposal restriction regulations – information, if provided to or obtained by the owner or operator of the chemical waste landfill, that shows the liquids do not exceed 500 ppm and are not an ignitable waste.
SP.45.4. Checklist item deleted. **[Deleted October 1998].**	Checklist item deleted due to 29 June 1998 regulatory revision.
SP.45.5. Checklist item deleted. **[Deleted October 1998].**	Checklist item deleted due to 29 June 1998 regulatory revision.
SP.45.6. PCB Transformers with PCB concentrations of 500 ppm or greater shall be disposed of in either a USEPA approved incinerator or a chemical waste landfill (40 CFR 761.60(b)(1)).	Determine if the PCB Transformers are being disposed of at a USEPA-approved incinerator or a chemical waste landfill. Verify that, if disposal is being done at a chemical waste landfill, the transformer is drained of all free-flowing liquids, filled with solvent, allowed to stand for at least 18 h, and than drained thoroughly.

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SP.45.7. PCB Capacitors must be disposed of in accordance with certain requirements (40 CFR 761.60(b)(2) and 761.60(b)(4)(ii)) **[Revised October 1998].**	Verify that disposal of PCB Capacitors was done as follows: – PCB Small Capacitors (less than 1.36 kg (3 lb) of PCBs) are disposed of in a solid waste landfill – PCB Large, High- or Low-Voltage Capacitors (greater than 1.36 kg (3 lb) of PCBs) containing more than 500 ppm are incinerated in a USEPA-approved incinerator. (NOTE: The Large, High- or Low-Voltage capacitors may be disposed of in a chemical waste landfill upon approval of the USEPA.) Verify that Large Capacitors that contain >/= 50 ppm but < 500 ppm are disposed of in an approved disposal facility. Verify that capacitors in storage are placed in DOT-approved containers with absorbent material.
SP.45.8. PCB hydraulic machines containing PCBs at concentrations >/= 50 ppm must be disposed of according to specific parameters (40 CFR 761.60(b)(3)) **[Revised October 1998].**	Verify that PCB hydraulic machines with PCB concentrations at >/= 50 ppm are disposed of by one of the following methods: – in accordance with decontamination standards and procedures in 40 CFR 761.79 – in a facility that is permitted, licensed, or registered to manage municipal solid waste or nonmunicipal nonhazardous waste (excluding thermal treatment units) – in an industrial furnace operating in compliance with 40 CFR 781.72 – in an approved disposal facility. Verify that all free-flowing liquid is removed from each machine and disposed of appropriately. (NOTE: If the PCB liquid contains >/= 1000 ppm, the hydraulic machine must be decontaminated or flushed with a solvent that contains < 50 ppm PCB.)
SP.45.9. The disposal of PCB-Contaminated Electrical Equipment (50 to 500 ppm PCB), except capacitors must meet specific requirements (40 CFR 761.60(b)(4)) **[Revised October 1998].**	Verify that the free-flowing liquid is drained from electrical equipment and disposed of properly. Verify that the drained PCB-Contaminated Electrical Equipment, including any residual liquids, is disposed of by one of the following methods: – in a facility that is permitted, licensed, or registered to manage municipal solid waste or nonmunicipal nonhazardous waste (excluding thermal treatment units)

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	– in an industrial furnace operating in compliance with 40 CFR 781.72 – in an approved disposal facility. (NOTE: The storage for disposal of PCB-Contaminated Electrical Equipment containing no free-flowing liquid is not regulated.)
SP.45.10. PCB Articles shall be disposed of properly (40 CFR 761.60(b)(6)(i) and 761.60(b)(6)(ii)) **[Revised October 1998].**	Verify that PCB Articles with concentrations at 500 ppm or greater are disposed of in either: – a USEPA-approved incinerator – a chemical waste landfill if all free-flowing liquids have been removed. Verify that PCB Articles with PCB concentration between 50 and 500 ppm are drained of all free-flowing liquid. Verify that PCB-Contaminated Articles with no free-flowing liquids are disposed of by one of the following methods: – in accordance with decontamination standards and procedures in 40 CFR 761.79 – in a facility that is permitted, licensed, or registered to manage municipal solid waste or nonmunicipal nonhazardous waste (excluding thermal treatment units) – in an industrial furnace operating in compliance with 40 CFR 781.72 – in an approved disposal facility.
SP.45.11. PCB Containers shall be disposed of properly (40 CFR 761.60(c)).	Verify that PCB Containers with concentrations of 500 ppm or greater are disposed of in one of the following ways: – in a USEPA-approved incinerator – in a chemical waste landfill, if first the container is drained of any liquid PCBs. Verify that PCB Containers used to contain only PCBs at concentrations less than 500 ppm are drained of PCB liquid prior to disposal as municipal solid waste.

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SP.45.12 Certain disposal methods for PCBs are prohibited (40 CFR 761.50(a)(1) through 761.50(a)(3) and 761.50(a)(5)) **[Added October 1998].**	Verify that no open burning of PCBs is performed. Verify that liquid PCBs are not processed into nonliquid forms to circumvent high temperature incineration requirements. Verify that water containing PCBs are not discharged to a treatment works or to a navigable waters unless the PCB concentration is 3 µg/L (approximately 3 ppb), or unless the discharge is in accordance with a PCB discharge limit included in a permit. (NOTE: When land disposing of nonliquid PCBs, otherwise applicable sampling requirements may be avoided by presuming that the PCBs are >/= 500 ppm if no free-flowing liquids are present.)
SP.45.13. Performance-based disposal of PCB bulk product waste must be in accordance with specific parameters (40 CFR 761.62(a) and 761.62(c)) **[Added October 1998].**	Verify that PCB bulk product waste is disposed of as follows when using performance-based disposal: – in an incinerator approved under 40 CFR 761.70 – in a chemical waste landfill approved under 40 CFR 761.75 – in a permitted hazardous waste landfill – under an approved alternate disposal method – in accordance with the decontamination provisions of 40 CFR 761.79 – for metal surfaces in contact with PCBs, in accordance with the thermal decontamination provisions of 40 CFR. 761.79(c)(6) – in accordance with a TSCA PCB Coordinated Approval. Verify that, if bulk product waste is disposed of in a manner other than prescribed in 40 CFR 761.62(a) or 761.62(b), approval has been received from the USEPA Regional Administrator in the Region where the disposal site is located for disposal or storage occurring in a single USEPA Region; or the Director of the National Program Chemicals Division, for disposal occurring in more than one USEPA Region.
SP.45.14. Disposal of PCB bulk product waste in solid waste landfills must be in accordance with specific parameters (40 CFR 761.62(b) through 761.62(d)) **[Added October 1998].**	Verify that, when PCB bulk product waste is disposed of in a solid waste landfill, the landfill is facility permitted, licensed, or registered by a state as a municipal or nonmunicipal nonhazardous waste landfill. (NOTE: The following PCB bulk product waste may be disposed of in a facility permitted, licensed, or registered by a state as a municipal or nonmunicipal nonhazardous waste landfill: – plastics (such as plastic insulation from wire or cable; radio, television, and computer casings; vehicle parts; or furniture laminates); preformed or molded rubber parts and components; applied dried paints, varnishes, waxes or other similar coatings or sealants; caulking; Galbestos; nonliquid building demolition debris; or nonliquid PCB bulk product waste from the shredding of

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	automobiles or household appliances from which PCB small capacitors have been removed (shredder fluff) – other sampled PCB bulk product waste that leaches PCBs at <10 µg/L of water measured using a procedure used to simulate leachate generation.) Verify that, if disposal of offsite PCB bulk product waste is done at a waste management facility not having a commercial PCB storage or disposal approval, a written notice is provided to the facility a minimum of 15 days in advance of the first shipment from the same disposal waste stream. Verify that the written notice states that the PCB bulk product waste may include components containing PCBs at </= 50 ppm based on analysis of the waste in the shipment or application of a general knowledge of the waste stream (or similar material) which is known to contain PCBs at those levels, and that the PCB bulk product waste is known or presumed to leach <10 µg/L PCBs. Verify that, if materials other than those listed in the NOTE are disposed of in a facility that is permitted, licensed, or registered by a state to manage municipal solid waste or nonmunicipal nonhazardous waste, the following are met: – the PCB bulk product waste is segregated from organic liquids disposed of in the landfill unit – leachate is collected from the landfill unit and monitored for PCBs. Verify that, if materials other than those listed in the NOTE are disposed at a waste management facility not having a commercial PCB storage or disposal approval, a written notice is sent to the facility a minimum of 15 days in advance of the first shipment from the same disposal waste stream and with each shipment thereafter. Verify that the notice states that the PCB bulk product waste may include components containing PCBs at >/= 50 ppm based on analysis of the waste in the shipment or application of a general knowledge of the waste stream (or similar material) which is known to contain PCBs at those levels, and that the PCB bulk product waste is known or presumed to leach >/= 10 µg/L PCBs. Verify that, for any disposal of PCB bulk product waste, a written record is maintained of all sampling and analysis of PCBs or notifications made for 3 yr from the date of the waste's generation. Verify that any release of PCBs (including but not limited to leachate)

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	from the landfill unit is cleaned up in accordance with 40 CFR 761.61. (NOTE: Bulk product waste as described in the NOTE may be disposed of as daily landfill cover as long as the daily cover remains in the landfill and is not released or dispersed by wind or other action or under asphalt as part of a road bed.) (NOTE: The requirements in Subpart C: Marking of PCBs and PCB Items and Subpart K: PCB Waste Disposal Records and Reports do not apply to the wastes addressed in this checklist item.) Verify that, if bulk product waste is disposed of in a manner other than prescribed in 40 CFR 761.62(a) or 761.62(b), approval has been received from the USEPA Regional Administrator in the Region where the disposal site is located for disposal or storage occurring in a single USEPA Region; or the Director of the National Program Chemicals Division, for disposal occurring in more than one USEPA Region.
SP.45.15. PCB household waste must be disposed of according to specific parameters (40 CFR 761.63) **[Added October 1998].**	Verify that PCB household waste is managed in a facility permitted, licensed, or registered by a state to manage municipal or industrial solid waste, or in a facility with an approval to dispose of PCB bulk product waste. (NOTE: PCB household waste managed according to these parameters is not subject to any other requirements under 40 CFR 761.)

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ASBESTOS MANAGEMENT **SP.55** **General**	
SP.55.1. Regions are required to implement a program to inspect buildings under their control for the presence of asbestos (RP, 561 FW 8.6A(1)) **[Citation Revised June 1998].**	Verify that the buildings and facility support system have been surveyed for the presence of asbestos.
SP.55.2. Warning labels must be affixed to ACM or PACM in specific circumstances (29 CFR 1910.1001(j)(4)(i)).	Verify that warning labels are affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers. Verify that, when a building owner or employer identifies previously installed ACM and/or PACM, labels or signs are affixed or posted so that employees will be notified of what materials contain ACM and/or PACM. Verify that the employer attaches such labels in areas where they will clearly be noticed by employees who are likely to be exposed, such as at the entrance to mechanical rooms/areas. (NOTE: Signs required by 29 CFR 1910.1001(j)(3) may be posted in lieu of labels, so long as they contain information required for labeling.) (NOTE: The intent of these requirements is to warn any individual who might be disturbing the ACM and/or PACM. A label may be affixed to the ACM or PACM itself, or a sign may be posted on the door to the room that indicates which parts of the room contain ACM or PACM. The signs must be located in a place where an individual who was going to disturb the ACM/PACM for any reason would see them. Color coding may be used for pipes or similar structures. It is not sufficient simply to have a map of the facility that indicates where ACM/PACM is located, nor is it sufficient simply to tell the employees where such material is located.)

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	(NOTE: These provisions do not apply in either of the following provisions: – asbestos fibers have been modified by a bonding agent, coating, binder, or other material, provided that the manufacturer can demonstrate that during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentration of fibers of asbestos in excess of the TWA PEL and/or excursion limit will be released – asbestos is present in a product in concentrations less than one percent.)
SP.55.3. Warning labels must be in compliance with specific requirements (29 CFR 1910.1001(j)(4)(ii)).	Verify that warning labels include the following information: DANGER CONTAINS ASBESTOS FIBERS AVOID CREATING DUST CANCER AND LUNG DISEASE HAZARD
SP.55.4. All ACM left in place will be labeled to alert potential maintenance operations of the potential hazard (RP, 561 FW 8.6C(2)} **[Citation Revised June 1998].**	Verify that ACM at the facility is labeled.

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ASBESTOS MANAGEMENT **SP.60** **Renovation and Demolition of Asbestos Containing Structures**	
SP.60.1. Certain notification requirements must be met when demolishing structures (40 CFR 61.145(a)(1), 61.145(a)(3), and 61.145(b)) **[Revised October 1998]**.	(NOTE: This applies to Federal facilities that demolish structures containing at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m^2 (160 ft^2) of RACM on other components or at least 1 m^3 (35 ft^3) off facility components, and Federal facilities renovating structures and stripping or removing at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m^2 (160 ft^2) of friable asbestos on other facility components and at least 1 m^3 (35 ft^3) off facility components.) Determine if the USEPA or state (if the state has primacy) has been provided with written notice of intent to demolish or renovate at least 10 working days before demolition begins and as early as possible before renovation begins. Verify that the written notice contains the following information: – name of the owner/operator and telephone number – name and address of facility – description of facility being renovated or demolished (size, age, prior use) – estimates of approximate amount (linear feet or surface area) of asbestos present in the structure – location of the structure – scheduled start and completion dates of renovation or demolition – nature of planned demolition or renovation methods to be used – procedures for asbestos emissions control – name and location of waste disposal site where asbestos will be disposed – whether or not it is a revised notification – certification that at least one trained person will supervise. (NOTE: Notifications following these guidelines must also be submitted for facilities being demolished under an order of a state or local governmental agency because the facility is structurally unsound and in danger of imminent collapse.)
SP.60.2. Facilities	Verify that a written notice of intent to demolish has been submitted

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demolishing a facility with RACM of less than 80 linear meters (260 linear feet) on pipes and less than 15 m^2 (160 ft^2) on other facility components and less than 1 m^3 (35 ft^3) off facility components are required to submit notification of demolition (40 CFR 61.145(a)(2) and 61.145(b)).	to the Administrator at least 10 working days before demolition and includes: – the name and address of owner and operator – description of the facility being demolished including the size, age, and prior use – estimate of the approximate amount of friable asbestos present – location of the facility – schedule – procedures to be used.
SP.60.3. Facilities that demolish structures are required to meet certain emission control requirements (40 CFR 61.145(a)(1) through 61.145(a)(3) and 61.145(c)(1) through 61.145(c)(3)).	(NOTE: These requirements apply to facilities that demolish structures which contain at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m^2 (160 ft^2) of RACM on other facility components and facilities renovating structures and stripping or removing at least 80 linear meters (260 linear feet) of friable asbestos on pipes, or at least 15 m^2 (160 ft^2) of friable asbestos on other facility components or 1 m^3 (35 ft^3) or more off facility components.) Verify that all RACMs are removed from facilities being demolished or renovated before any wrecking or dismantling unless: – it is a Category I nonfriable ACM that is not in poor condition and is not friable – the RACM is on a facility component that is encased in concrete or other similar material and is adequately wetted whenever exposed during demolition – it was not accessible for testing and is not discovered until after demolition began and, as a result of demolition, the materials cannot be safely removed – it is Category II nonfriable ACM and the probability is low that the materials will become crumbled, pulverized, or reduced to powder, during demolition. Verify that, when a facility component that contains or is covered or coated with RACM is being taken out of the facility in units or sections: – they are adequately wetted when RACM are exposed during cutting and disjointing operations, and – the units or sections are carefully lowered to ground level.

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	Verify that RACM is adequately wetted when it is being stripped from facility components while it remains in place in the facility except in renovation operation where wetting would unavoidably damage equipment and the facility: – requests a determination from the Administrator as to whether unavoidable damage would occur and supply Administrator with the information needed to make the decision – uses one of the following emission control methods: – a local exhaust ventilation and collection system – a glove bag system – leaktight wrapping to contain all RACM.
SP.60.4. Emissions from facility components that have been taken out in units or in sections from facilities being demolished under state or local orders or facilities being demolished or renovated with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m^2 (160 ft^2) of RACM on other facility components or at least 1 m^3 (35 ft^3) off facility components must be controlled (40 CFR 61.145 (c)(4) and 61.145(c)(5)).	Verify that facility components are either stripped or contained in leaktight wrappings. Verify that facility components removed from facility as units or in sections for stripping meet the following: – RACM is adequately wet during stripping operations – a local exhaust ventilation and collection system designed and operated to capture emissions is in use – the exhaust system exhibits no visible emissions to outside air. Verify that, when wetting operations are stopped because of the temperature, a record of the temperature is made and kept on file for 2 yr. (NOTE: For large facility components such as reactor vessels, large tanks, and steam generators, but not beams, stripping is not required if the following are met: – the component is removed, transported, stored, disposed of, or reused without disturbing the RACM – the component is encased in leaktight wrapping and labeled.)
SP.60.5. Emissions from RACM that has been	Verify that asbestos materials that have been removed or stripped

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removed or stripped from facilities being demolished under state or local orders or facilities being demolished or renovated with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m^2 (160 ft^2) of RACM on other facility components or 1 m^3 (35 ft^3) or greater off facility components must be controlled (40 CFR 61.145 (c)(6)).	meet the following: – materials are adequately wet, and remain wet until collected for disposal – materials are carefully lowered to the ground or lower floor (not dropped or thrown) – materials not removed as units or in sections are transported to the ground via dust-tight chutes or containers if they are removed more than 50 ft above ground level.
SP.60.6. When the temperature at the point of wetting is below 0°C [32°F] and facilities are being demolished under state or local orders or facilities with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m^2 (160 ft^2) of RACM other facility components or at least 1 m^3 (35 ft^3) off facility components are being demolished or renovated, specific exemptions and requirements apply (40 CFR 61.145(c)(7)).	Verify that facility components coated or covered with RACM materials are removed as units or in sections to the maximum extent possible. (NOTE: Wetting is not required at this temperature,) Verify that, when wetting operations are stopped because of freezing temperatures, the temperature is recorded in the areas containing the facility components at the beginning, middle, and end of each work day. Verify that the temperature records are kept for 2 yr.
SP.60.7. Facilities being demolished under state or local governmental	Verify that, in facilities being demolished under state or local governmental agency orders, the portion of the facility that contains friable asbestos materials is adequately wetted during the wrecking

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agency orders shall have the portion of the facility containing friable asbestos adequately wetted during the wrecking operation (40 CFR 61.145 (c)(9)).	operation.
SP.60.8. When a facility is demolished by intentional burning, all RACM, including Category I and II nonfriable ACM must be removed (40 CFR 61.145(c)(10)).	Verify that complex removal is done before burning.
SP.60.9. When air cleaning is used as a method for controlling emissions of asbestos to the outside air, the fabric filter collection systems are required to meet specific standards unless alternative equipment is authorized for use by the USEPA (40 CFR 61.152).	Verify that fabric filter collection systems meet the following requirements: – airflow permeability does not exceed 9 $m^3/min/m^2$ (30 $ft^3/min/ft^2$) for woven fabrics or 11 $m^3/min/m^2$ (35 $ft^3/min/ft^2$) for felted fabrics – the felted fabric weighs at least 475 g/m^2 (14 oz/yd^2) and is at least 1.6 mm (1/16 in.) thick throughout – the use of synthetic fabrics containing fill yarn other than that which is spun is avoided.

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ASBESTOS MANAGEMENT **SP.65** **Personnel Training**	
SP.65.1. No RACM shall be stripped, removed, or otherwise handled or disturbed unless at least one onsite representative trained in asbestos removal is present (40 CFR 61.145(c)(8)).	Verify that a trained person is present. Verify that the individual receives refresher training every 2 yr. (NOTE: This applies to quantities of at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m^2 (160 ft^2) of RACM on other facility components or 1 m^3 (35 ft^3) or greater off facility components.)
SP.65.2. All employees working with asbestos at levels at or above the permissible exposure level (PEL) and/or excursion limit for 30 or more days per year are required to participate in a medical surveillance program (RP, 561 FW 8.6H) **[Citation Revised June 1998].**	(NOTE: The current PEL is an airborne concentration of asbestos of 0.1 fiber/cc of air or higher as calculated as an 8-h time weighted average (TWA). The excursion limit is 0.1 fiber/cc of air or higher as measured over a 30-min period.) Verify that appropriate personnel participate in the program.

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ASBESTOS MANAGEMENT **SP.70** **Disposal** **SP.70.1.** Asbestos-containing waste materials are required to be disposed of properly (40 CFR 61.150(a) through 61.150(b)).	(NOTE: These requirements do not apply to Categories I or II nonfriable ACM that did not become crumbled, pulverized, or reduced to powder.) Verify that no visible emissions are discharged to the outside air during the collection, processing, packaging, transporting, or depositing of asbestos-containing waste material, or that the facility uses one of the following methods: – the asbestos-containing waste is adequately wetted – the asbestos-containing waste is processed into nonfriable forms – an alternative method approved by the USEPA. Verify that, if the waste is wetted, the following is done: – asbestos waste from control devices is mixed with water to form a slurry and the other materials are adequately wetted – no visible emissions are discharged or air cleaning is used to control the emissions – the wetted materials are sealed in leaktight containers while wet and labeled with the phrase CAUTION, CONTAINS ASBESTOS - AVOID OPENING OR BREAKING CONTAINER, BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH or a label approved by OSHA – materials that don't fit in containers are put into leaktight wrapping. Verify that the waste generator deposits all ACM as soon as practical at one of the following: – a properly operated waste disposal site – a USEPA approved site that converts RACM and asbestos-containing waste material into asbestos-free material.

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SP.70.2. Asbestos-containing waste must be transported according to specific parameters (40 CFR 61.150(c) through 61.150(e)).	Verify that vehicles used to transport asbestos-containing waste material are marked indicating an asbestos dust hazard. Verify that, for all ACM transported off the facility, waste shipment records are maintained for at least 2 yr and a copy is provided to the waste disposal site. Verify that a procedure is in place to notify the local, state, or USEPA regional office if a copy of the waste shipment record is not returned to the waste generator within 35 days after the waste was accepted by the initial transporter.
SP.70.3. Active waste disposal sites where ACM is being disposed of are required to meet specific standards (40 CFR 61.154(a) through 61.154(e) and 61.154(i) through 61.154(j)).	Determine if the facility is operating a landfill where asbestos is being disposed. Verify that there are no visible emissions from active asbestos-containing waste disposal sites, or that: – at the end of each operating day, or once in a 24 h period, the waste material is covered with either at least 15 cm (6 in.) of compacted non ACM – a resinous or petroleum based dust suppression agent is applied, waste crankcase oil is not suitable for this purpose – an alternative method of control approved by the USEPA is used. Verify that, unless a natural barrier exists deterring access by the general public, either the waste is properly covered by non-ACM daily or proper warning signs and fences are installed and maintained as follows: – warning signs are displayed at all entrances at intervals of 100 m (330 ft) or less along property line of the site or the perimeter of the section of the site where ACM is disposed and state that the site contains asbestos and warns against creating dust – the area is adequately fenced. Verify that a copy of waste shipment records are maintained for 2 yr. Verify that until closure, a record is kept of the location, depth, and area of asbestos-containing waste on a map or diagram of the disposal area. Verify that upon closure, the administration receives a copy of all

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	records. Verify that a procedure is in place to notify the administration in at least 45 days prior to excavating or disturbing deposited asbestos-containing waste material.
SP.70.4. Inactive waste disposal sites are required to meet specific standards (40 CFR 61.154(f) through 61.154(h) and 61.151).	Verify that inactive waste disposal sites meet one of the following: – no visible emissions are discharged – asbestos-containing waste material is covered with at least 15 cm (6 in.) of compacted non-ACM, and a vegetation cover is grown and maintained. (NOTE: In desert areas where vegetation is difficult to maintain at least 8 cm (3 in.) additional of well-graded nonasbestos-containing crushed rock may be used instead.) – cover the asbestos-containing waste material with at least 60 cm (2 ft) of non-ACM and maintain the cover to prevent exposure. Verify that, unless a natural barrier exists, warning signs and a fence are installed to deter public access. Verify that warning signs are displayed at all entrances and at intervals of 100 m (328 ft) or less and are easily read indicating the area is an asbestos waste disposal site. Verify that a procedure is in place to notify the administrator in writing at least 45 days prior to excavating or disturbing any asbestos-contaminated waste material at an inactive waste disposal site.

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SP.80 **RADON GAS**	
SP.80.1. FWS facilities are required to test for radon according to specific procedures (RP. 561 FW 12.4A through 12.4C) **[Citation Revised June 1998].**	Verify that all occupied Service-owned or leased building have been tested for radon. (NOTE: Buildings tested prior to the issuance of this policy (28 March 1996) that were found to have radon levels less than 4 pCi/L are considered to have met the requirements of this policy.) Verify that testing and analysis is performed by USEPA approved contractors, or by qualified local, State, or Federal health services personnel. (NOTE: Testing priority is as follows: – residences and dormitories – hatcheries supplied by subsurface water sources with fully enclosed structures – buildings occupied on a 24 h basis – buildings occupied, but less than 24 h a day – buildings occupied intermittently.) Verify that all Service owned, nonpublic, subsurface water sources are tested at the point of entry into the structure and mitigation implemented when the concentration of the radon in water is equal to or greater than 300 pCi/L (NOTE: For initial monitoring a track-etch type (alpha Track) monitor or its equivalent is recommended. Other types may be used if they are on the USEPA or State list of acceptable devices.) Verify that short term measurements lasting 90 days or less are made under closed building conditions. Verify that screening tests are conducted on the lowest occupiable level and on the first above ground floor level.
SP.80.2. Depending on	Verify that when levels are above 20 pCi/L, the area is retested

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the results of the radon tests, specific mitigation measures must be taken (RP, 561 FW 12.4C) **[Citation Revised June 1998],**	immediately. Verify that when levels are between 4 pi/L and 20 pCi/L, retesting is done within 6 mo. Verify that when levels are above 200 pCi/L, mitigation activities start within 1 mo. (NOTE: For levels above 200 pCi/L, temporary removal of employees from the work space and occupants from residences is recommended.) (NOTE: If additional time is required for mitigation in areas where the result was greater than 200 pCi, the premises must be vacated until the mitigation achieves a reduction to lower radon levels.) Verify that for levels between 20 pCi/L and 200 pCi/L mitigation activities are begun within 6 mo and the temporary removal of employees is considered for levels at the higher end of the range. Verify that when levels are between 4 pCi/L and 20 pCi/L, mitigation begins within 1 yr based on the testing and analysis. (NOTE: For levels less than 4 pCi/L no mitigation is required.)
SP.80.3. Structures which have undergone mitigation are required to undergo additional monitoring (RP, 561 FW 12.5E) **[Citation Revised June 1998].**	Verify that after the installation of a radon reduction system, measurements of radon gas are made over a minimum period of 3 mo. (NOTE: Secondary longer term measurements, usually 12 mo, will provide a more definitive picture of radon exposure reduction.)

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SP.85 **ENVIRONMENTAL NOISE** **SP.85.1.** A single facility point-of-contact (POC) should be identified for noise complaints (MP).	Verify that a POC has been identified if the facility has activities that produce noise that would potential disturb people outside the property lines. Verify that the POC keeps a log of complaints.

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LEAD BASED PAINT **SP.95** **General** **SP.95.1.** A lead based paint survey should be done in all Service housing where employees and their families are living and appropriate remediation to protect the inhabitants (MP).	Verify that a lead based paint survey has been done in all Service housing where employees and their families are living. Verify that, if needed, remediation is done to protect inhabitants.

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LEAD-BASED PAINT (LBP) MANAGEMENT **SP.100** **Notification Requirements**	(NOTE: The following are exempted from these notification requirements (40 CFR 745.101): – sales of target housing at foreclosure – leases of target housing that have been found to be LBP free by an inspector certified under the Federal certification program or under a Federally accredited state or tribal certification program – short-term leases of 100 days or less where no lease renewal or extension can occur – renewal of existing leases in target housing where all required LBP disclosures have previously occurred (renewal includes both renegotiation of existing lease terms and/or ratification of a new lease).)
SP.100.1. The FWS is responsible for informing lessees of target housing of the presence of any known LBP and/or LBP hazards according to specific parameters (40 CFR 745.100, 745.107, 745.113(b), and 745.113(c)).	(NOTE: These requirements take effect as follows: – for owners of more than four residential dwellings, 6 September 1996 – for owners of one to four residential dwellings, 6 December 1996.) (NOTE: The disclosure requirements do not imply a positive obligation on the lessor to conduct any evaluation or reduction activities.) Verify that, in the disclosure process, the lessor provides the following prior to signature on a lease: – a copy of a USEPA approved lead hazard information pamphlet – the presence of any known LBP and/or LBP hazards in the target housing being leased – any additional information available concerning the known LBP and/or LBP hazards such as the basis for determination that LBP or LBP hazards exist, the location of the LBP or LBP hazards, and the condition of the painted surfaces – copies of records or reports available pertaining to LBP or LBP hazards in the target housing, including reports regarding common areas – records or reports regarding other residential dwelling in multifamily target housing if the information is a part of an evaluation or reduction of LBP and/or LBP hazard in the target housing as a whole. Verify that the contracts to lease target housing include an

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	attachment containing the following elements in the language of the contract: – a lead warning statement (appropriate language can be found in 40 CFR 745.113) – a statement by the lessor disclosing the presence of known LBP or LBP hazards in the target housing, or a statement indicating no knowledge of the presence of LBP and/or LBP hazards – any additional information available concerning the known LBP and/or LBP hazards such as the basis for determination that LBP or LBP hazards exist, the location of the LBP or LBP hazards and the condition of the painted surfaces – a list of records/reports available to the lessor pertaining to the LBP and/ LBP hazards that have been provided to the purchaser – a statement by the lessee indicating the above items have been received – signatures of lessees, agents, lessors certifying the accuracy of the statements. Verify that the lessor retains a copy of the contract attachments for no less than 3 yr from the start of the leasing period.
SP.100.2. The FWS is responsible for informing purchasers of target housing of the presence of any known LBP and/or LBP hazards according to specific parameters (40 CFR 745.100, 745.107, 745.110, 745.113(a), and 745.113(c)).	(NOTE: These requirements take effect as follows: – for owners of more than four residential dwellings, 6 September 1996 – for owners of one to four residential dwellings, 6 December 1996.) (NOTE: The disclosure requirements do not imply a positive obligation on the seller to conduct any evaluation or reduction activities.) Determine if the facility is in the process of selling any target housing. Verify that in the disclosure process the seller provides the following to the purchaser prior to the purchaser being obligated under any contract: – a copy of a USEPA approved lead hazard information pamphlet – the presence of any known LBP and/or LBP hazards in the target housing being sold – any additional information available concerning the known LBP and/or LBP hazards such as the basis for determination that LBP or LBP hazards exist, the location of the LBP or LBP hazards, and the condition of the painted surfaces

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	– copies of records or reports available pertaining to LBP or LBP hazards in the target housing, including reports regarding common areas
	– records or reports regarding other residential dwelling in multifamily target housing if the information is a part of an evaluation or reduction of LBP and/or LBP hazard in the target housing as a whole.
	
	(NOTE: Before a purchaser is obligated under any contract to purchase target housing, the seller has to permit the purchaser a 10-day period to conduct a risk assessment or inspection for the presence of LBP and/or LBP hazards. A different period of time may be used if both parties mutually agree in writing. A purchaser may waive this opportunity, but must do so in writing.)
	
	Verify that the contracts to sell target housing include an attachment containing the following elements in the language of the contract:
	
	– a lead warning statement (appropriate language can be found in 40 CFR 745.113)
	– a statement by the seller disclosing the presence of known LBP or LBP hazards in the target housing, or a statement indicating no knowledge of the presence of LBP and/or LBP hazards
	– any additional information available concerning the known LBP and/or LBP hazards such as the basis for determination that LBP or LBP hazards exist, the location of the LBP or LBP hazards, and the condition of the painted surfaces
	– a list of records/reports available to the seller pertaining to the LBP and/LBP hazards that have been provided to the purchaser
	– a statement by the purchaser indicating the above items have been received
	– a statement by the purchaser that they have either:
	  – received the opportunity to conduct a risk assessment or inspection
	  – waived the opportunity
	– signatures of sellers, agents, purchasers certifying the accuracy of the statements.
	
	Verify that the seller retains a copy of the contract attachments for no less than 3 yr from the start of the leasing period.

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SP.100.3. Specific notifications must be issued prior to the renovation of any residential unit of target housing (40 CFR 745.81, 745.82 and 745.85) **[Added June 1998].**	(NOTE: This requirement is in effect as of 1 June 1999 and applies to all renovations of target housing performed for compensation.) (NOTE: This requirement does not apply to renovation activities that are limited to the following: – minor repair and maintenance activities (including minor electrical work and plumbing), that disrupts 2 ft^2 or less of painted surface per component – emergency renovation operations – renovations in target housing in which a written determination has been made by a certified inspector that the components affected by the renovation are free of paint or other surface coatings that contain lead =/> 1.0 mg/cm^2 or 0.5% by weight, where the renovator has obtained a copy of the determination.) Verify that no more than 60 days prior to starting renovation activities in any residential dwelling unit of target housing, the renovator: – provides the owner of the unit with a pamphlet and obtains either a written acknowledgment from the owner or a certificate of mailing at least 7 days prior to the renovation – provides the adult occupant of the unit if the unit is not owner occupied, and obtains one of the following: – from the adult occupant, a written acknowledgment that the occupant has received the pamphlet; or written certification that a pamphlet has been delivered to the dwelling and that the renovator has been unsuccessful in obtaining a written acknowledgment from an adult occupant – a certificate of mailing at least 7 days prior to the renovation. (NOTE: A certificate of mailing must include the address of the unit undergoing renovation, the date and method of delivery of the pamphlet, names of the persons delivering the pamphlet, reason for lack of acknowledgment (e.g., occupant refuses to sign, no adult occupant available), the signature of the renovator, and the date of signature.) Verify that no more than 60 days prior to starting renovation activities in common areas of multifamily housing, the renovator: – provides the owner with the pamphlet and obtains written acknowledgment from the owner or a certificate of mailing at least 7 days prior to the renovation – notifies in writing, or ensures written notification of, each unit of

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	the multifamily housing and make the pamphlet available upon request prior to the start of renovation – prepares, signs, and dates a statement describing the steps performed to notify all occupants of the intended renovation activities and to provide the pamphlet. – provide further written notification if the scope, locations, or expected starting and ending dates of the planned renovation activities change after the initial notification providing revised information on the ongoing or planned activities. (NOTE: Subsequent notification must be provided before the renovator initiates work beyond that which was described in the original notice.) Verify that the notification for renovation in common areas describes the general nature and locations of the planned renovation activities, the expected starting and ending dates, and a statement of how the occupant can obtain the LBP pamphlet at no charge from the renovator.
SP.100.4. Certain records are required to be kept in relation to notification of LBP renovations (40 CFR 745.81, 745.82 and 745.86) **[Added June 1998].**	(NOTE: This requirement is in effect as of 1 June 1999 and applies to all renovations of target housing performed for compensation.) (NOTE: This requirement does not apply to renovation activities that are limited to the following: – minor repair and maintenance activities (including minor electrical work and plumbing) that disrupts 2 ft^2 or less of painted surface per component – emergency renovation operations.) Verify that all records necessary to demonstrate compliance with this requirement are maintained for 3 yr, including: – reports by a certified inspector that the components affected by the renovation are free of paint or other surface coatings that contain lead =/> 1.0 mg/cm^2 or 0.5% by weight, where the renovator has obtained a copy of the determination – signed and dated acknowledgments of receipt – certifications of attempted delivery – records of notification activities performed relating to common area renovations.

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LEAD-BASED PAINT (LBP) MANAGEMENT **SP.105** **Training Requirements**	(NOTE: These requirements apply: – to all individuals and firms engaged in LBP activities except persons who perform these activities within residential dwellings that they own, unless one of the following circumstances is present: – the residential dwelling is occupied by a person or persons other than the owner or the owners immediate family while these activities are being performed – a child residing in the building has been identified as having an elevated blood lead level (EBL) – only in those States or Indian Country that do not have an authorized State or Tribal program (40 CFR 744.220(b).)
SP.105.1. All LBP activities are required to be performed by certain individuals or firms (40 CFR 745.220(a), 745.226(a)(3), 745.226(e), and 745.233) **[October 1996]**.	(NOTE: This requirement is effective as of 30 August 1999.) Verify that all LBP activities are performed by USEPA certified individuals or firms. (NOTE: Certification is available for inspectors, risk assessors, supervisors, project designers, or abatement workers.) Verify that recertification is done: – every 3 yr if the individual completed a training course with a course test and hands-on assessment – every 5 yr if the individual completed a training course with a proficiency test. (NOTE: Application for certification by the USEPA is not available until 1 March 1999.)

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
LEAD-BASED PAINT (LBP) MANAGEMENT **SP.110** **Work Practice Standards**	(NOTE: These requirements apply: – to all individuals and firms engaged in LBP activities except persons who perform these activities within residential dwellings that they own, unless one of the following circumstances is present: – the residential dwelling is occupied by a person or persons other than the owner or the owners immediate family while these activities are being performed – a child residing in the building has been identified as having an EBL – only in those States or Indian Country that do not have an authorized State or Tribal program (40 CFR 744.220(b).)
SP.110.1. Inspections are required to be done according to specific methodologies (40 CFR 745.227(a)(1), 745.227(b), and 745.227(f)) **[October 1996].**	(NOTE: These requirements are effective as of 1 March 1999.) Verify that inspections are done by USEPA certified inspectors. Verify that inspections were performed according to a documented methodology (such as HUD Guidelines) and include: – in a residential dwelling and child-occupied facility, each component with a distinct painting history and each exterior component with a distinct painting history is tested for LBP, except for components which are determined to have been replaced after 1978 or to not contain LBP at all – in a multi-family dwelling or child occupied facility, each component with a distinct painting history in every common area, except those components which have been determined to have been replaced after 1978 or to not contain LBP. Verify that an inspection report is prepared that includes the following: – date of each inspection – address of building – date of construction – apartment numbers (if applicable) – name, address, and telephone number of the owner or owners of each residential dwelling or child-occupied facility – name, signature, and certification number of each certified inspector and/or risk assessor conducting testing – name, address, and telephone number of the certified firm employing each inspector and/or risk assessor, if applicable – each testing method and device and/or sampling procedures

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	employed for paint analysis, including quality control data and, if used the serial number of any x-ray fluorescence (XRF) device – specific location of each painted component tested for the presence of LBP – the results of the inspection expressed in terms appropriate to the sampling method used.
SP.110.2. Lead hazard screens are required to be done according to specific methodologies (40 CFR 745.227(a)(1), 745.227(c), and 745.227(f)) **[October 1996]**.	(NOTE: These requirements are effective as of 1 March 1999.) Verify that lead hazard screens are only done by a person certified by the USEPA as a risk assessor. Verify that lead hazard screens were conducted according to a documented methodology (such as HUD Guidelines) and included: – background information is collected on the physical characteristics of the residential dwelling or child-occupied facility and occupant use patterns that may cause LBP exposure to one or more children age 6 yr or under – a visual inspection of the residential dwelling or child-occupied facility is conducted to determine if deteriorated paint is present and locate at least two dust sampling locations – each surface with deteriorated paint which is determined, using documented methodologies, to be in poor condition and to have a distinct painting history is tested for the presence of lead – in residential dwellings, two composite dust samples are collected, one from the floors and the other from the windows, in rooms, hallways, or stairwells where one or more children age 6 and under are most likely to come in contact with dust – in multi-family dwellings and child-occupied facilities, in addition to floor and window samples, composite dust samples are collected from common areas where one or more children age 6 and under are most likely to come into contact with dust. (NOTE: Sampling and testing methodologies are prescribed by the USEPA.) Verify that a lead hazard screen report is produced which contains the following: – date of each screening – address of building – date of construction – apartment numbers (if applicable) – name, address, and telephone number of the owner or owners of

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	each residential dwelling or child-occupied facility – name, signature, and certification number of each risk assessor conducting testing – name, address, and telephone number of the certified firm employing each risk assessor, if applicable – name, address, and telephone number of each recognized laboratory conducting analysis of collected samples – results of the visual inspection – each testing method and device and/or sampling procedures employed for paint analysis – specific location of each painted component tested for the presence of LBP – all data collected from onsite testing, including quality control data and, if used, the serial number of any XRF device – all results of laboratory analysis on collected paint, soil, and dust samples – any other sampling results – any background information – recommendations.
SP.110.3. Risk assessments are required to be done according to specific methodologies (40 CFR 745.227(a)(1) and 745.227(d)) **[October 1996]**.	(NOTE: These requirements are effective as of 1 March 1999.) Verify that risk assessments are only done by a person certified by the USEPA as a risk assessor. Verify that the risk assessment is conducted as follows: – background information is collected on the physical characteristics of the residential dwelling or child-occupied facility and occupant use patterns that may cause LBP exposure to one or more children age 6 yr or under – a visual inspection of the residential dwelling or child-occupied facility is conducted to determine if deteriorated paint is present, assess the extent and causes of deterioration, and other potential LBP hazards – each surface with deteriorated paint which is determined, using documented methodologies, to be in poor condition and to have a distinct painting history is tested for the presence of lead – surfaces determined, using documented methodologies, to be a potential LBP hazard and having a distinct painting history are tested for lead – in residential dwelling dust samples (either composite or single surface samples) are collected from the floors, the windows, in all

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	living areas where one or more children age 6 and under are most likely to come in contact with dust – in multi-family dwellings and child-occupied facilities in addition to floor and window samples, dust samples (either composite or single surface) are collected from common areas adjacent to the residential dwelling or child-occupied facility and other common areas where one or more children, age 6 and under, are likely to come into contact with dust – for child-occupied facilities, window and floor dust samples (either composite or single surface samples) are collected in each room, hallway, or stairwell utilized by one or more children age 6 and under, and in other common areas in the child-occupied facility where one or more children, age 6 and under, are likely to come into contact with dust – soil samples are collected and analyzed for lead concentration in exterior play areas where bare soil is present and dripline/foundation areas where bare soil is present. (NOTE: Sampling and testing methodologies are prescribed by the USEPA.) Verify that a risk assessment report is produced which contains the following: – date of assessment – address of building – date of construction – apartment numbers (if applicable) – name, address, and telephone number of the owner or owners of each building – name, signature, and certification number of each risk assessor conducting testing – name, address, and telephone number of the certified firm employing each risk assessor, if applicable – name, address, and telephone number of each recognized laboratory conducting analysis of collected samples – results of the visual inspection – each testing method and device and/or sampling procedures employed for paint analysis – specific location of each painted component tested for the presence of LBP – all data collected from onsite testing, including quality control data and, if used, the serial number of any XRF device – all results of laboratory analysis on collected paint, soil, and dust samples – any other sampling results

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	– any background information – results of previous inspections of analyses to the extent they are used as a part of the hazard determination – a description of the location, type, and severity of identified LBP hazards and any other potential lead hazards – a description of interim controls and/or abatement options for each identified LBP hazard and a suggested prioritization for addressing each hazard. Verify that, if the report suggests using encapsulation or enclosure, a maintenance schedule and monitoring schedule is recommended in the report.
SP.110.4. LBP abatement is required to be done according to specific methodologies (40 CFR 745.227(a)(1) and 745.227(e)) **[October 1996]**.	(NOTE: These requirements are effective as of 1 March 1999.) Verify that each abatement project has a certified supervisor that is onsite during all work site preparation and during the post-abatement cleanup of work areas. Verify that, when abatement activities are being conducted, the supervisor is either onsite or available by telephone, pager, or answering service and able to be present at the work site in not more than 2 h. Verify that the USEPA was notified prior to the start of abatement activities. Verify that a written occupant protection plan was developed for all projects describing the measures and management procedures that will be taken during the abatement to protect the building occupants from LBP exposure and is unique to each dwelling and each child-occupied dwelling. Verify that the occupant protection plan was prepared by a certified supervisor or project designer. Verify that the following constraints are followed during the abatement: – there is no open-flame burning or torching of LBP – machine sanding or grinding or abrasive blasting of LBP is not done unless used with HEPA exhaust control which removes particles of 0.3 microns or larger from the area at 99.97 percent or greater efficiency

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	– dry scrapings are done only in conjunction with heat guns or around electrical outlets or when treating defective paint spots totaling no more than 2 ft^2 in any one room, hallway or stairwell or totaling no more than 20 ft^2 on exterior surfaces – operating a heat gun on LBP is done only at temperatures below 1100° F. Verify that soil abatement is done by either replacing the soil or permanently covering it. Verify that the following post-abatement procedures are performed by a certified inspector or risk assessor: – a visual inspection to determine if deteriorated paint and visible dust, debris, or residue are present – elimination of deteriorated paint and visible dust, debris, or residue before clearance continues – clearance sampling for lead contaminated dust are taken a minimum of 1 h after completion of final post-abatement cleanup activities – when there has been containment between abated and unabated areas, one dust sample is taken from one window (if available) and one dust sample from the floor of no less than four rooms (or all such spaces if there are fewer than four rooms), hallways, or stairwells within the containment area – when there has been containment between abated and unabated areas, one dust sample is taken from the floor outside the containment area – when there has been no containment, two dust samples (one dust sample from one window and one from the floor) are taken from no less than four room (or all such spaces if there are fewer than four rooms), hallways, or stairwells in the residential dwelling or child-occupied facility – for an exterior paint abatement, a visible inspection is performed to identify dust and paint chips. Verify that residual lead levels from each dust sample are compared with applicable clearance levels for lead in dust on floors and windows and if the residual level exceed the clearance levels, all components represented by the failed test are recleaned and retested. (NOTE: In a multi-family dwelling with similarly constructed and maintained residential dwelling, random sampling for the purposes of clearance may be done if: – the certified individuals who abate or clean the residential dwelling do not know which residential dwellings will be selected

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	for random sampling – a sufficient number of residential dwellings are selected to provide a 95 percent level of confidence that no more than 5 percent or 50 of the residential dwellings (whichever is smaller) in the randomly sampled population exceed the appropriate clearance levels.) Verify that an abatement report is prepared by a certified supervisor or project designer and contains the following information: – start and completion dates – the name and address of each certified firm conducting the abatement and the name of each supervisor assigned to the abatement project – the occupant protection plan – the name, address, and signature of each certified risk assessor or inspector conducting clearance sampling and the date of clearance testing – the results of clearance testing and all soil analyses and the name of each recognized laboratory that conducted the analyses – a detailed written description of the abatement, including abatement methods used, locations of rooms and/or components where abatement occurred, reason for selecting particular abatement methods for each component, and any suggested monitoring or encapsulants or enclosures.

Appendix 8-1

PCB Label Format
(40 CFR 761.45)

CAUTION

Contains

PCBS

(Polychlorinated Biphenyls)

A toxic environmental contaminant requiring special handling and disposal in accordance with U.S. Environmental Protection Agency Regulations 40 CFR 761 -- For disposal information contact the nearest U.S. EPA Office

_____

In case of accident or spill, call toll free the U.S. Coast Guard National Response Center 800-424-8802

Also Contact: _____

Tel No. _____

Appendix 8-2

Dielectric Fluid Trend Names and Manufacturers

1. U.S. Manufactured Dielectrics:

Name	Manufacturer
Aroclor	Monsanto
Aroclor B	Mallory
Sbestol	American Corporation
Askarel Hevi-Duty	Hevi-Duty Corporation
Askarel *	Ferranti-Packard,Ltd.
Askarel	Universal Mfg. Co.
Chlorextol	Allis-Chalmers
Chlorinol	Sparagoe Electric
Chlorphen	Jard Company
Diaclor	Sangamo Electric
Dykanol	Cornell Dubilier
Elemex	McGraw Edison
Eucarel	Electric Utilities Co.
Hyvol	Aerovox
Inerteen	Westinghouse Electric
No-Flamol	Wagner Electric
Pyranol	General Electric
Saf-T-Kuhl	Kuhlman Electric

* Generic name used for insulating liquids in capacitors and transformers.

2. Foreign Manufactured Dielectrics:

Name	Manufacturer
Clophen	Bayer (Germany)
Fenclo	Caffaro (Italy)
Kennechlor	Mitsubishi (Japan)

Phenoclor	Prodelec (France)
DK	Caffaro (Italy)
Pyralene	Prodelec (France)
Solvol	USSR
Santotherm	Mitsubishi (Japan)

3. Transformers that list other dielectrics or do not bear a manufacturer's identification or service plate on the transformer: if the transformer contains any of the dielectrics (commonly referred to as askarels), it is to be certified as a PCB transformer containing in excess of 500 ppm PCB and no laboratory testing is necessary.

Appendix 8-3

PCB Wastes Disposal Guidance
(40 CFR 761.50(b))
[Added October 1998]

Waste	Applicable Standard	Checklist Item number
PCB liquids	Disposal - 40 CFR 761.60(a) Decontamination - 40 CFR 761.79	T1.50.2 through T1.50.5
PCB Item containing an intact and non-leaking PCB Article	Disposal - 40 CFR 761.60(b) Decontamination - 40 CFR 761.79	T1.50.6 through T1.50.10
PCB Item containing a PCB Article which is not intact and non-leaking	Disposal - 40 CFR 761.62(a) or 761.62(c)	T1.50.14
Fluorescent light ballasts containing PCBs only in an intact and non-leaking PCB Small Capacitor	Disposal - 40 CFR 761.60(b)(2)(ii)	T1.50.6
Fluorescent light ballasts containing PCBs in the potting material	Disposal - 40 CFR 761.62	T1.50.14 and T1.50.15
PCB Remediation Waste, including PCB sewage sludge	Cleanup and Disposal - 40 CFR 761.61	
PCB Bulk Product Waste	Disposal - 40 CFR 761.62	T1.50.14 and T1.50.15
PCB Household Waste	Disposal - 40 CFR 761.63	T1.50.16
PCB R&D Waste	Disposal - 40 CFR 761.64	
PCB/Radioactive Waste	Disposal must be done taking into account both its PCB concentration and radioactive properties	
Porous Surfaces on which PCBs have been spilled and meeting the definition of remediation waste.	Disposal - 40 CFR 761.61(a)(5)(iii)	
Porous surfaces which are part of	Disposal - 40 CFR 761.62	T1.50.14 and

Waste	Applicable Standard	Checklist Item number
manufactured non-liquid products containing PCBs and meeting the definition of PCB bulk product waste		T1.50.15
Concrete surfaces on which PCBs have been spilled	Decontamination - 40 CFR 761.79(b)(4) is started within 72 h of the initial spill	
Porous non-liquid PCBs in contact with non-porous surfaces, such as underground metal fuel tanks coated with fire retardent resin or pitch.	Decontaminate - 40 CFR 761.79(b)(3) for purposes of unrestricted use or disposal in a smelter.	

SECTION 9

UNDERGROUND STORAGE TANK (UST) MANAGEMENT

U.S. ECAH, September 1999

A. Applicability

This section applies to FWS facilities that utilize USTs for storage of hazardous materials or petroleum products. This section presents review action items for the proper management of USTs. The evaluation of UST management ranges from the installation of new systems and the maintenance of existing systems, to the repair, replacement, or permanent removal of USTs.

B. Federal Legislation

- *The Resource Conservation and Recovery Act* (RCRA), Subtitle I. This law, Public Law (PL) 99-49 (42 U.S. Code (USC) 6991-6991i), established the standards and procedures for USTs. It required the U.S. Environmental Protection Agency (USEPA) to issue standards on leak detection, record maintenance, release reporting, corrective actions, tank upgrading, and replacement (42 USC 6991b(a)(c)).

- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*. This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or for correcting situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

- Federal regulations used to develop the checklist include:

    - EO 12088, *Federal Compliance with Pollution Control Standards*.
    - 40 CFR 280, *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)*.

C. State/Local Regulations

Many state and local governments have active UST programs. These various governments have developed regulations specific to the physical environment and the regulated communities' needs. It is important to review regulations at the state and local level to ensure that any differences such as reporting or notice requirements, and monitoring requirements are complied with.

D. FWS/DOI Manuals

- 561 FW 7, Compliance Requirements RCRA - Underground Storage Tanks. This chapter, dated 20 June 1995, provides guidance for management of USTs at Service facilities.

E. Key Compliance Requirements

- Substandard USTs - Substandard UST systems must be upgraded, closed, or removed from service by 22 December 1998 (40 CFR 280.21(a) through 280.21(c)).

- New or Upgraded USTs - New or upgraded USTs are required to be fitted with spill and overfill prevention equipment. Notice must be given to the appropriate authority within 30 days when a UST system is brought into service after 8 May 1986. If the UST is installed after 22 December 1988, it must be constructed so that it will remain structurally sound for its operating life. Installation of USTs must be done by a certified installer and UST systems must be made of or lined with, materials compatible with the substance stored (40 CFR 280.20, 280.21(d), 280.22, and 280.32).

- Metallic USTs - Buried metallic storage tanks installed after 1973 must be protected from corrosion by coatings, cathodic protection, or other effective methods. They must also undergo regular pressure testing (40 CFR 112.7(e)(2)(iv)).

- Spill and Overfill Prevention - The filling of a UST must include the prevention of overfilling and spilling of the substance. If a spill does occur, facilities with UST systems are required to contain and immediately cleanup a spill or overfill and report it to the implementing agency within 24 h if (40 CFR 280.30 and 280.53):
    1. spills or overfills of petroleum resulted in a release to the environment of more than 25 gal or caused a sheen on nearby surface water
    2. spills or overfills of hazardous substances result in a release to the environment in excess of the reportable quantity.

- Corrosion Protection and Repairs - Corrosion protection on USTs must operate continuously to provide corrosion protection to the metal components that routinely contain regulated substances and are in contact with the ground. UST systems with impressed current cathodic protection are required to be inspected every 60 days by a qualified cathodic protection tester. Repairs to USTs must be performed according to industry code. Tanks and piping that have been replaced or repaired are required to be tested for tightness within 30 days. Records of repairs shall be maintained for the life of the tank (40 CFR 280.31, 280.33, 280.43, and 280.44).

- Release Detection - Facilities with new and existing USTs are required to provide a method, or combination of methods of release detection. Release detection requirements in 40 CFR 280.40 through 280.45 do not apply to USTs which store fuel solely for use by emergency power generators. Release detection records are required to be kept as follows (40 CFR 280.40 through 280.45):
    1. all written performance claims pertaining to any release detection system used for 5 yr from the date of installation
    2. the results of any sampling testing or monitoring for 1 yr
    3. the results of tank tightness testing, until the next test is done
    4. written documentation of calibration, maintenance, repair, of release detection equipment permanently located onsite, at least 1 yr after the servicing is done
    5. schedules of required calibration and maintenance provided by the release detection equipment manufacturer, 5 yr after the date of installation.

  Depending on the age, size, and construction of the tank, acceptable methods of release detection include the following:
    1. inventory control
    2. manual tank gauging

3. tank tightness testing
4. automatic tank gauging
5. vapor monitoring
6. groundwater monitoring
7. interstitial monitoring.

Existing UST system tanks must implement release detection requirements based on when the system was installed. The table below identifies the deadline for providing release detection:

UST System Installation Date	Leak Detection Required by 22 December of:
All others	1992
1980-December 1988	1993

- Release Detection for Underground Piping Associated with UST Systems - 40 CFR 280, Subpart D, establishes separate release detection requirements for underground piping depending on whether it conveys substances under pressure or suction. These include:
  1. Pressurized piping must be equipped with an automatic line leak detector and have an annual line tightness test conducted; or pressurized piping must be equipped with an automatic line leak detector and a permanent release detection system that allows monthly monitoring. Permanent release detection methods acceptable for piping include: vapor monitoring, interstitial monitoring, and groundwater monitoring. The deadline for implementing release detection requirements on pressurized piping is 22 December 1990.
  2. Suction piping either must have a line tightness test conducted every 3 yr or must use a permanent release detection system that allows monthly monitoring. Deadlines for implementing release detection requirements on suction piping are based on when the UST system was installed. The table above identifies the deadline for providing release detection. For suction piping constructed to certain standards, no release detection monitoring is required. It must meet five criteria:
     a. belowgrade piping must operate at less than atmospheric pressure
     b. belowgrade piping must be sloped to drain back into the tank when suction is released
     c. only one check valve can be included in each suction line
     d. check valve shall be located directly below and as close as practical to the suction pump
     e. criteria in paragraphs b through d must be verifiable.

- Hazardous Substance USTs - Existing hazardous substance USTs are required to meet release detection standards for petroleum USTs (40 CFR 280.42).

- Reporting and Recordkeeping Requirements - Facilities are required to submit notifications of new USTs, release reports, planned or completed corrective actions, and notice of closure or change-in-service when applicable. Records are required to be available at the UST site or at a readily available alternative site. Records are to be kept of the following (40 CFR 280.34 280.45, and 280.74):
  1. corrosion expert's analysis of site corrosion potential if corrosion protection equipment is not used
  2. documentation of operation of corrosion protection equipment

3. documentation of repairs
4. closure records
5. results of any site investigations.

- Change-in-Service or Closure of USTs - USTs which are put out of service temporarily must have continued maintenance. If the UST has been out-of-service for near or over 1 yr, plans must be made for permanent closure. The facility must notify the implementing agency (USEPA) for any closure or change-in-service 30 days in advance or within a reasonable time frame as determined by the implementing agency. UST closure must be done by either removing the tank from the ground or leaving it in place with the contents removed and the tank filled with an inert solid material and closing it to all future outside access. If a tank is undergoing a change-in-service, it must be emptied and cleaned and a site assessment conducted. Prior to the completion of permanent closure or change-in-service, measurements must be made for the presence of a release where contamination is most likely to be present at the site. Facilities with UST systems closed prior to 22 December 1988 must, when directed by the implementing agency, assess the excavation zone and close the UST according to current standards if releases from the UST may pose a current or potential threat to human health and the environment (40 CFR 280.70 through 280.73).

- Recordkeeping - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

F. Key Compliance Definitions

- *Aboveground Release* - any release to the surface of the land or to surface water. This includes, but is not limited to, releases from the aboveground portion of a UST system and aboveground releases associated with overfills and transfer operations as the regulated substance moves to or from a UST system (40 CFR 280.12).

- *Ancillary Equipment* - any devices including, but not limited to, such devices as pipings, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of regulated substances to and from the UST (40 CFR 280.12).

- *Belowground Release* - any release to the subsurface of the land and to groundwater. This includes, but is not limited to, releases from the belowground portion of a UST system and belowground releases associated with overfills and transfer operations as the regulated substance moves to or from a UST (40 CFR 280.12).

- *Cathodic Protection* - a technique to prevent corrosion of a metal surface by making that surface the cathode of an electrochemical cell. For example, a tank system can be cathodically protected through the application of either galvanic anodes or impressed current (40 CFR 280.12).

- *Cathodic Protection Tester* - a person who can demonstrate understanding of the principles and measurements of all common types of cathodic protection systems as applied to buried or submerged metal piping and tank systems. At a minimum, such persons must have education and experience in soil resistivity, stray current, structure-to-soil potential, and component electrical isolation measurements of buried metal piping and tank systems (40 CFR 280.12).

- CERCLA - Comprehensive Environmental Response Compensation and Liability Act of 1980 as amended (40 CFR 280.12).

- *Compatible* - the ability of two or more substances to maintain their respective physical and chemical properties upon contact with one another for the design life of the tank system under conditions likely to be encountered in the UST (40 CFR 280.12).

- *Connected Piping* - all underground piping including valves, elbows, joints, flanges, and flexible connectors attached to a tank system through which regulated substances flow. For the purpose of determining how much piping is connected to any individual UST system, the piping that joins two UST systems should be allocated equally between them (40 CFR 280.12).

- *Consumptive Use* - with respect to heating oil means consumed on the premises (40 CFR 280.12).

- *Corrosion Expert* - a person who, by reason of thorough knowledge of the physical sciences and the principles of engineering and mathematics acquired by a professional education and related practical experience, is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Such a person must be accredited or certified as being qualified by the National Association of Corrosion Engineers or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks (40 CFR 280.12).

- *Deferred USTs* - USTs which are exempt from meeting the requirements in 40 CFR 280 except those concerning release response and corrective action for UST systems containing petroleum or hazardous substances in 40 CFR 280.60 through 280.67. These tanks include (40 CFR 280.10(e):
    1. wastewater treatment tank systems
    2. any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954
    3. any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
    4. airport hydrant fuel distribution systems
    5. UST system with field-constructed tanks.

  See also the definitions for USTs and Excluded USTs.

- *Dielectric Material* - a material that does not conduct direct electrical current. Dielectric coatings are used to electrically isolate UST systems from the surrounding soils. Dielectric bushings are used to electrically isolate portions of the UST system (e.g., tank from piping) (40 CFR 280.12).

- *Electrical Equipment* - underground equipment that contains dielectric fluid that is necessary for the operation of equipment such as transformers and buried electric cable (40 CFR 280.12).

- *Excavation Zone* - the volume containing the tank system and backfill material bounded by the ground surface, walls, and floor of the pit and trenches into which the UST system is placed at the time of installation (40 CFR 280.12).

- *Excluded USTs* - these are USTs which are not required to meet the requirements found in 40 CFR 280 and include (40 CFR 280.10(b)):
    1. any UST system holding hazardous wastes listed under Subtitle C of the *Solid Waste Disposal Act* (SWDA), or a mixture of such hazardous waste and other regulated substances
    2. any wastewater treatment tank system that is part of a wastewater treatment facility regulated under Section 402 or 307(b) of the *Clean Water Act* (CWA)
    3. equipment or machinery that contains regulated substances for operational purposes such as hydraulic lift tanks and electrical equipment

4. any UST system whose capacity is 110 gal or less
5. any UST system that contains a *de minimis* concentration of a regulated substance
6. any emergency spill or overflow containment UST system that is expeditiously emptied after use.

See also the definitions for Deferred USTs and USTs.

- *Existing Tank System* - a tank system used to contain an accumulation of regulated substances or for which installation has commenced on or before 22 December 1988. Installation is considered to have commenced if (40 CFR 280.12):
  1. the owner or operator has obtained all Federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system
  2. a. either a continuous onsite physical construction or installation program has begun
     b. or the owner or operator has entered into any contractual obligations:
        i. which cannot be canceled or modified without substantial loss
        ii. for physical construction at the site or installation of the tank system to be completed within a reasonable time.

- *Farm Tank* - a tank located on a tract of land devoted to the production of crops or raising animals, including fish, and associated residences and improvements. A farm tank must be located on the farm property. Farm includes fish hatcheries, rangeland, and nurseries with growing operations (40 CFR 280.12).

- *Flow-Through Process Tank* - a tank that forms an integral part of a production process through which there is a steady, variable, recurring, or intermittent flow of materials during the operation of the process. Flow-through process tanks do not include tanks used for the storage of material prior to their introduction into the production process or for the storage of finished products or by-products from the production (40 CFR 280.12).

- *Free-Product* - a regulated substance that is present as a nonaqueous phase liquid (e.g., liquid not dissolved in water) (40 CFR 280.12).

- *Gathering Lines* - any pipeline, equipment, facility, or building used in the transportation of oil or gas during oil or gas production (40 CFR 280.12).

- *Hazardous Substance UST System* - any UST system that contains a hazardous substance defined in section 101(14) of the CERCLA (but not including any substance regulated as a hazardous waste under subtitle C) or any mixture of such substances and petroleum, and which is not a petroleum UST system (40 CFR 280.12).

- *Heating Oil* - petroleum that is No. 1, No. 2, No. 4--light, No. 4--heavy, No. 5--heavy, and No. 6 technical grades of fuel oil; other residual fuel oils (including Navy Special Fuel Oil and Bunker C); and other fuels when used as substitutes for one of these fuel oils. Heating oil is typically used in the operation of heating equipment, boilers, or furnaces (40 CFR 280.12).

- *Hydraulic Lift Tank* - a tank holding hydraulic fluid for a closed-loop mechanical system that uses compressed air or hydraulic fluid to operate lifts, elevators, and other similar devices (40 CFR 280.12).

- *Liquid Trap* - sumps, well cellars, and other traps used in association with oil and gas production, gathering, and extracting operations (including gas production plants), for the purpose of collecting oil, water, and other liquids. These liquid traps may temporarily collect liquids for subsequent disposition or reinjection into a production or pipeline stream, or may collect and separate liquids from a gas stream (40 CFR 280.12).

- *Maintenance* - the normal operational upkeep to prevent a UST system from releasing product (40 CFR 280.12).

- *Management Practice (MP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.

- *Motor Fuel* - petroleum or a petroleum-based substance that is motor gasoline, aviation gasoline, No. 1 or No. 2 diesel fuel, or any grade of gasohol, and is typically used in the operation of motor engines (40 CFR 280.12).

- *New Tank System* - a tank system that will be used to contain an accumulation of regulated substances and for which installation has commenced after 22 December 1988 (40 CFR 280.12).

- *Noncommercial Purposes with Respect to Motor Fuel* - not for resale (40 CFR 280.12).

- *On the Premises Where Stored (heating oil)* - UST systems located on the same property where the stored heating oil is used (40 CFR 280.12).

- *Operator* - any person in control of or having responsibility for the daily operation of the UST system (40 CFR 280.12).

- *Overfill Release* - a release that occurs when a tank is filled beyond its capacity, resulting in a discharge of the regulated substance to the environment (40 CFR 280.12).

- *Person* - an individual, trust, firm, joint stock company, Federal agency, corporation, state, municipality, commission, political subdivision of a state, or any interstate body. Person also includes a consortium, a joint venture, a commercial entity, and the U.S. Government (40 CFR 280.12).

- *Petroleum UST System* - a UST system that contains petroleum or a mixture of petroleum with *de minimis* quantities of other regulated substances. Such systems include those containing motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils (40 CFR 280.12).

- *Pipe or Piping* - a hollow cylinder or tubular conduit that is constructed of nonearthen materials (40 CFR 280.12).

- *Pipeline Facilities* - (including gathering lines) are new and existing pipe rights-of-way and any associated equipment, facilities, or buildings (40 CFR 280.12).

- *Regulated Substance (40 CFR 28012)* -
    1. any substance defined in section 101(14) of the CERCLA of 1980 (but not including any substance regulated as a hazardous waste under subtitle C)
    2. petroleum, including crude oil or any fraction thereof that is liquid at standard conditions of temperature and pressure (60 °F and 14.7 lb/psia).

  (NOTE: The term regulated substance includes, but is not limited to, petroleum and petroleum based substances comprised of a complex blend of hydrocarbons derived from crude oil though processes of separation, conversion, upgrading, and finishing, such as motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils.)

- *Release* - any spilling, leaking, emitting, discharging, escaping, leaching, or disposing from a UST into groundwater, surface water, or subsurface soils (40 CFR 280.12).

- *Release Detection* - determining whether a release of a regulated substance has occurred from the UST system into the environment or into the interstitial space between the UST system and its secondary barrier or secondary containment around it (40 CFR 280.12).

- *Repair* - to restore a tank or UST system component that has caused a release of product from the UST system (40 CFR 280.12).

- *Residential Tank* - a tank located on property used primarily for dwelling purposes (40 CFR 280.12).

- SARA - Superfund Amendments and Reauthorization Act (40 CFR 280.12).

- *Septic Tank* - a water-tight covered receptacle designed to receive or process, through liquid separation or biological digestion, the sewage discharged from a building sewer. The effluent from such receptacle is distributed through the soil and settled solids and scum from the tank are pumped out periodically and hauled to a treatment facility (40 CFR 280.12).

- *Stormwater or Wastewater Collection System* - piping, pumps, conduits, and any other equipment necessary to collect and transport the flow of surface water runoff resulting from precipitation, or domestic, commercial, or industrial wastewater to and from retention areas or any areas where treatment is designated to occur. The collection of stormwater and wastewater does not include treatment except where incidental to conveyance (40 CFR 280.12).

- *Surface Impoundment* - a natural topographic depression, manmade excavation, or diked area formed primarily of earthen materials (although may be lined with manmade materials) that is not an injection well (40 CFR 280.12).

- *Tank* - a stationary device designed to contain an accumulation of regulated substances and constructed of nonearthen materials (e.g., concrete, steel, plastic) that provide structural support (40 CFR 280.12).

- *Underground Area* - an underground room such as a basement, cellar, shaft, or vault, providing enough space for physical inspection of the exterior of the tank situated on or above the surface of the floor (40 CFR 280.12).

- *Underground Release* - any belowground release (40 CFR 280.12).

- *Underground Storage Tank (UST)* - any one or a combination of tanks (including underground pipes connected thereto) that is used to contain an accumulation of regulated substances, and the volume of which (including the volume of underground pipes connected thereto) is 10 percent or more beneath the surface of the ground. This term does not include any (40 CFR 280.12):
    1. farm or residential tank of 1100 gal or less capacity used for storing motor fuel for noncommercial purposes
    2. tank used for storing heating oil for consumptive use on the premises where stored
    3. septic tanks
    4. pipeline facility (including gathering lines) which are regulated by other Acts
    5. surface impoundment, pit, pond, or lagoon
    6. stormwater or waste water collection system
    7. flow-through process tank

8. liquid trap or associated gathering lines directly related to oil or gas production and gathering operations
9. storage tank situated in an underground area if the storage tank is situated upon or above the surface of the floor such as basements or tunnels
10. tanks holding 110 gal or less
11. emergency spill and overfill tanks.

(NOTE: The definition of UST does not include any pipes connected to any tank which is described in para (1) through (9) of this definition. Also refer to the definition for Deferred UST and Excluded UST.)

- *Upgrade* - the addition or retrofit of some systems such as cathodic protection, lining, or spill and overfill controls to improve the ability of a UST system to prevent the release of product (40 CFR 280.12).

- *UST System or Tank System* - UST, connected underground piping, underground ancillary equipment, and containment system, if any (40 CFR 280.12).

- *Wastewater Treatment Tank* - a tank that is designed to receive and treat influent waste water through physical, chemical, or biological methods (40 CFR 280.12).

UNDERGROUND STORAGE TANK (UST) MANAGEMENT

GUIDANCE FOR CHECKLIST USERS

	REFER TO CHECKLIST ITEMS:
All Facilities	UT.1.1 through UT.1.4
Substandard USTs	UT.10.1
New or Upgraded USTs	UT.15.1 through UT.15.5
Metallic USTs	UT.20.1
UST Filling	UT.25.1 and UT.25.2
UST Corrosion Protection	UT.30.1
UST Repairs	UT.35.1
Release Detection For USTs	
General	UT.40.1
Petroleum USTs	UT.45.1
Hazardous Substance USTs	UT.50.1 and UT.50.2
Exempted USTs	UT.55.1
UST Releases	UT.60.1 through UT.60.7
Deferred USTs	UT.65.1
UST Documentation	UT.70.1 and UT.70.2
Changes-in-Service or Closure of USTs	UT.75.1 through UT.75.7

UNDERGROUND STORAGE TANK (UST) MANAGEMENT

Records To Review

- Official correspondence with state implementing agency
- Results of all UST testing, sampling, monitoring, inspection, maintenance, and repair work (for 1 yr)
- Registration records for all in-service, temporarily out-of-service, and permanently closed tanks
- Records for UST disposal, closure, and removal from activity and results of excavation area assessment (for 3 yr)

Physical Features To Inspect

- Refueling facilities, including:
    - Belowground storage tanks and dikes
    - Venting
    - Fill pipe
    - Gauges
    - Vehicle Maintenance areas
- Oil and Hazardous Substance Site
- Any site with a UST

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
UT.1 **ALL FACILITIES**	
UT.1.1. The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), inter-agency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/ identifying information as the citation).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, interagency agreements, or equivalent state enforcement actions. (NOTE: Some FWS USTs fall under the definition of a farm tank and are exempted from the requirements of 40 CFR 280.)
UT.1.2. FWS facilities are required to comply with state and local regulations (EO 12088, Section 1-1).	Verify that the facility is complying with state and local requirements. Verify that the facility is operating according to permits issued by the state or local agencies. (NOTE: Issues typically regulated by state and local agencies include: – operational standards – permitting requirements – replacement and removal schedules – cathodic protection requirements – alarm system requirements.)
UT.1.3. Facilities will meet regulatory requirements issued since the finalization of this handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).	Determine if any new regulations concerning UST have been issued since the finalization of this handbook. Verify that the facility is in compliance with newly issued regulations.
UT.1.4. FWS facilities	Determine if the facility has received an NOV relating to UST

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
should report all NOVs to the Region and Environmental and Facility Compliance (EFC) (MP) **[Revised June 1998].**	management. Verify that the NOV was reported to the Region and the EFC.

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**

UT.10
 	
SUBSTANDARD USTs
 	
UT.10.1. Substandard UST systems are required to be upgraded, closed, or removed from service by 22 December 1998 (40 CFR 280.10(c), 280.21(a) through 280.21(c)).
	(NOTE: See Appendix 9-1 for guidance on applicability of checklist items.)
	
	(NOTE: If a release detection system is not available for the UST, it must be phased out in 1 to 5 yr.)
	
	Determine if there are currently any plans for upgrading or decommissioning a substandard UST.
	
	Verify that upgrading of steel USTs includes one of the following methods:
	
	– internal lining according to the following requirements:
	  – lining is installed so that it prevents releases due to structural failure or corrosion and meets a recognized code of practice
	  – within 10 yr after installation of lining, and every 5 yr thereafter, the lined tank is inspected internally and found to be structurally sound, with the lining still performing in accordance with original design specifications
	– cathodic protection with field-installed systems designed by an expert, impressed current systems, or an approved equivalent system and the integrity is assured by one of the following:
	  – tank is internally inspected and assessed to ensure that the tank is structurally sound and free of corrosion
	  – the tank has been installed for less than 10 yr and is monitored monthly for releases
	  – the tank has been installed for less than 10 yr and is assessed for corrosion holes by conducting two tightness tests, one before and one 3 to 6 mo after installation of the cathodic protection system
	  – tank is assessed for corrosion holes by a method that is determined to be equally protective by the implementing agency
	– lining combined with cathodic protection:
	  – if lining is installed according to requirements
	  – if cathodic protection system meets requirements.
	
	Verify that, when spill and overfill equipment is added, the tank meets the same standards as new USTs.
	
	Verify that piping that routinely contains regulated substances and is in contact with the ground is cathodically protected.

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	(NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the Atomic Energy Act of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
UT.15 **NEW OR UPGRADED USTs** **UT.15.1.** New or upgraded USTs are required to be fitted with spill and overfill prevention equipment (40 CFR 280.10(c), 280.20(c), and 280.21 (d)).	Verify that spill prevention equipment will prevent a release of product to the environment when the transfer hose is detached from the fill pipe. Verify that overfill prevention equipment does one of the following: – automatically shuts off flow into the tank when the tank is no more than 95 percent full – alerts the transfer operator when the tank is no more than 90 percent full by restricting the flow into the tank or triggering a high-level alarm – restrict flow 30 min prior to overfilling, alert the operator with a high-level alarm 1 min before overfilling, or automatically shut off flow into the tank so that none of the fittings are exposed to product due to overfilling. (NOTE: This equipment is not required if approved equivalent equipment is used or the UST system is filled by transfers of no more than 25 gal at one time.) (NOTE: All existing tanks must be upgraded by 1998. The state may have a sooner deadline.) (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
UT.15.2. Notice must be given within 30 days when a UST system is brought into service after 8 May 1986 (40 CFR 280.10(c) and 280.22).	Determine if the facility has brought any USTs into service after 8 May 1986. Verify that the appropriate notification was issued. (NOTE: State forms may be used for notification in lieu of an USEPA form 7530. These notices must be sent to the appropriate agency.) (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the Atomic Energy Act of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
UT.15.3. UST systems installed after 22 December 1988 must be constructed in such a manner that they will remain structurally sound for their operating life (40 CFR 280.10(c), 280.20(a), and 280.20(b)).	Verify that USTs conform to industry standards by reviewing records. Verify that USTs meet the following: – they have leak/spill prevention protection – the tank is constructed of one of the following materials: – fiberglass-reinforced plastic – steel which has one of the following types of cathodic protection: – coated with a suitable dielectric material – field installed cathodic protection (expert installed) – impressed current systems which allow determination of cur rent operating status – steel-fiberglass-reinforced-plastic composite – metal without additional corrosion protection provided that: – the site has been determined, by a corrosion expert, not to cause corrosion to the tank – records are maintained for the life of the tank that it is in a corrosion free environment – construction is in a manner that is deemed to prevent release of the regulated substance. (NOTE: Piping must also meet these criteria with the exception of not being constructed of steel-fiberglass-reinforced-plastic composite.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
	(NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
UT.15.4. Installation of UST must be done by a certified installer and done according to standard practices (40 CFR 280.10(c), 280.20(d), and 280.20(e)).	Determine if new UST systems have been properly installed by reviewing records for certification. Verify that if, the facility does its own installation of USTs, the installation is done according to standard practices. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
UT.15.5. Facilities are required to use UST systems made of or lined with materials compatible with the substance stored (40 CFR 280.10(c) and 280.32).	Verify that the substances stored in UST systems are compatible with the system. Determine which USTs are being used to store a substance other than that for which it was originally intended. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
UT.20 **METALLIC USTs** **UT.20.1.** Buried metallic storage tanks installed after 1973 must be protected from corrosion by coatings, cathodic protection, or other effective methods (40 CFR 112.7(e)(2)(iv)).	Verify that new USTs are appropriately protected from corrosion by inspecting records and interviewing personnel. Verify that the tanks are pressure tested regularly. (NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if: – the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: – onshore and offshore sites which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines – equipment or operations of vessels or transportation related onshore and offshore sites which are subject to the authority of the DOT. – the facility, which although otherwise subject to USEPA jurisdiction meets both of the following criteria: – the underground buried storage capacity of the facility is 42,000 gal or less of oil – the storage capacity which is not buried at the facility is 1320 gal of oil or less and no single container exceeds a capacity of 660 gal (40 CFR 112.1(d)(2)).)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
UT.25 **UST FILLING**	
UT.25.1. The filling of a UST must include the prevention of overfilling and spilling of the substance (40 CFR 280.10(c) and 280.30 (a)).	Determine if there is a problem with overfilling of USTs or spills by observing the filling operations, reviewing records, and checking the ground around the fill-lines for visible or odorous indications of contamination. Determine if the level of the UST is checked before a transfer is made and that the volume available in the tank is greater than the volume of the product to be transferred. Verify that fill-lines are capped and locked. Verify that the transfer is monitored constantly. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
UT.25.2. Facilities with UST systems are required to contain and immediately clean up a spill or overfill and report it to the implementing agency within 24 h in specific situations (40 CFR 280.10(c), 280.30(b), and 280.53).	Determine if the facility has reported, contained, and cleaned up any and all spills or overfills which met the following criteria: – spills or overfills of petroleum that resulted in a release to the environment of more than 25 gal or that caused a sheen on nearby surface water – spills or overfills of hazardous substances that result in a release to the environment in excess of the reportable quantity (see the Hazardous Materials Management Appendices). (NOTE: Spills or overfills of hazardous substances to the environment equal to or greater than the reportable quantity must be immediately reported to the National Response Center (NRC).) Verify that the facility has contained and immediately cleaned-up a

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
	spill or overfill of petroleum that is less than 25 gal and a spill or overfill of a hazardous substance that is less than the reportable quantity. Verify that, if cleanup of these lesser quantities cannot be accomplished within 24 h, or another reasonable time period established by the implementing agency, the implementing agency is notified. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
UT.30 **UST CORROSION PROTECTION** **UT.30.1.** UST systems with corrosion protection must meet specific requirements (40 CFR 280.10(c) and 280.31).	Determine which UST systems have corrosion protection. Verify that the corrosion protection systems operate continuously to provide corrosion protection to the metal components that routinely contain regulated substances and are in contact with the ground. Verify that all cathodic protection systems are tested within 6 mo after installation and every 3 yr thereafter. Verify that UST systems with impressed current cathodic protection are inspected every 60 days. Verify that inspection records are maintained of the last three inspections for systems with impressed current cathodic protection and of the last two inspections for all other cathodic protection systems. Verify that inspections are carried out by a qualified cathodic protection tester. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
UT.35 **UST REPAIRS** **UT.35.1.** Repairs to USTs must be performed according to industry code (40 CFR 280.10(c) and 280.33).	Determine if there have been any repairs by reviewing the records and interviewing personnel. Determine who does repairs to USTs and that the following procedures are used to repair USTs: – fiberglass reinforced tanks are repaired by the manufacturer's authorized representative or according to industry standards – metal pipe fittings and sections that have leaked due to corrosion are replaced, whereas fiberglass may be repaired according to manufacturer's specifications. Verify that tanks and piping that have been replaced or repaired are tested for tightness within 30 days. (NOTE: Tanks and piping need not be tested if: – repairs are internally inspected – the repaired portion is already monitored monthly – an equally protective test is used.) Verify that within 6 mo of repair, tanks with cathodic protection systems are tested as follows: – every 3 yr thereafter for all cathodic protection systems – every 60 days for impressed current cathodic protection systems. Verify that records of repairs are maintained for the life of the tank. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
RELEASE DETECTION FOR USTs **UT.40** **General** **UT.40.1.** Facilities with new and existing USTs are required to provide a method, or combination of methods of release detection (40 CFR 280.10(c), 280.10(d), and 280.40) **[Revised January 1999]**.	Verify that the installed release detection system can detect a release from any portion of the tank and the connected underground piping. (NOTE: Any pressurized delivery lines must be retrofitted by 22 December 1990.) (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks – UST system that stores fuel solely for use by emergency power generator.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**

RELEASE DETECTION FOR USTs
 	
UT.45
Petroleum USTs
 	
UT.45.1. UST systems containing petroleum must meet specific release detection system requirements (40 CFR 280.10(c), 280.10(d), 280.40, 280.41, 280.43, and 280.44).
	Verify that tanks are monitored every 30 days using one of the following methods (details of methods are provided in Appendix 9-3):
	
	– tank automatic gauging
	– vapor monitoring
	– groundwater monitoring
	– interstitial monitoring
	– other acceptable methods.
	
	(NOTE: The following are exceptions:
	– UST systems which meet performance standards for new or upgraded systems and monthly inventory requirements may use tank tightness testing at least every 5 yr until 22 December 1998 or until 10 yr after the tank is upgraded or installed
	– UST systems which do not meet performance standards for new or upgraded systems, may use monthly inventory controls and annual tank tightness testing until 22 December 1998, at which time the tank must be upgraded or permanently closed
	– tanks which hold less than 550 gal may use weekly tank gauging.)
	
	Verify that underground piping, which routinely contains a regulated substance, has the following release detection done as described in Appendix 9-3:
	
	– pressurized piping:
	  – equipped with automatic line leak detector
	  – annual tightness testing or monthly monitoring.
	– suction piping:
	  – line tightness testing every 3 yr or monthly monitoring
	  – no release detection system is needed for suction piping which is below grade and:
	  – operates at less than atmospheric pressure
	  – is sloped so that contents of pipe will roll back to tank when suction is released
	  – only one check valve is included in each suction line
	  – the check valve is located directly below and as close as practical to the suction pump.

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
	(NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks – UST system that stores fuel solely for use by emergency power generator.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**

RELEASE DETECTION FOR USTs
 	
UT.50
Hazardous
Substance USTs
 	
UT.50.1. Hazardous substance USTs must meet specific release detection standards (40 CFR 280.10(c), 280.10 (d), 280.42(a), 280.43, and 280.44).
	Verify that tanks are monitored every 30 days using one of the following methods (details of methods are provided in Appendix 9-3):
	
	– tank automatic gauging
	– vapor monitoring
	– groundwater monitoring
	– interstitial monitoring
	– other acceptable methods.
	
	(NOTE: The following are exceptions:
	– UST systems which meet performance standards for new or upgraded systems and monthly inventory requirements may use tank tightness testing at least every 5 yr until 22 December 1998 or until 10 yr after the tank is upgraded or installed
	– UST systems which do not meet performance standards for new or upgraded systems may use monthly inventory controls and annual tank tightness testing until 22 December 1998, at which time the tank must be upgraded or permanently closed
	– tanks which hold less than 550 gal may use weekly tank gauging.)
	
	Verify that underground piping which routinely contains a regulated substance has the following release detection done as described in Appendix 9-3:
	
	– pressurized piping:
	  – equipped with automatic line leak detector
	  – annual tightness testing or monthly monitoring
	– suction piping:
	  – line tightness testing every 3 yr or monthly monitoring
	  – no release detection system is needed for suction piping which is below grade and:
	  – operates at less than atmospheric pressure
	  – is sloped so that contents of pipe will roll back to tank when suction is released
	  – only one check valve is included in each suction line
	  – the check valve is located directly below and as close as practical to the suction pump.

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
	(NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks – UST system that stores fuel solely for use by emergency power generator.)
UT.50.2. Hazardous substance USTs must meet specific release detection standards by 22 December 1998 (40 CFR 280.10(c), 280.10 (d), 280.42(b), 280.43, and 280.44).	Verify that existing hazardous substance USTs meet the requirements for new hazardous substance USTs by 22 December 1998 as stated below: – secondary containment is checked for evidence of a release at least every 30 days and is designed and constructed to: – contain regulated substances released until they are detected and removed – prevent releases of regulated substances to the environment at any time during the operational life of the UST – double-walled tanks are designed, constructed, and installed to: – contain releases from any portion of the inner tank within the outerwall – detect failure of the inner wall – external liners, including vaults, are designed, constructed, and installed in such a manner that: – 100 percent of the capacity of the largest tank is contained within its boundary – the interference of precipitation or groundwater intrusion is pre vented with the ability to contain or detect release of regulated substances – the tank is completely surrounded. Verify that underground piping is equipped with secondary containment which satisfies the requirements for UST secondary containment. Verify that piping which delivers regulated substances under pressure is equipped with an automatic line leak detector.

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
	Verify that, when other release detection methods are used, they are approved by the implementing agency. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks – UST system that stores fuel solely for use by emergency power generator.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
RELEASE DETECTION FOR USTs **UT.55** **Exempted USTs**	(NOTE: The checklist items in this portion apply to the following USTs: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks – UST system that stores fuel solely for use by emergency power generator.)

UT.55.1. UST systems containing fuel used solely for emergency generators should meet specific release detection system requirements (MP).	Verify that tanks are monitored every 30 days using the method in Appendix 9-3 except for:
	
	– UST systems which meet performance standards for new or upgraded systems and monthly inventory requirements may use tank tightness testing at least every 5 yr until 22 December 1998 or until 10 yr after the tank is upgraded or installed
	– UST systems which do not meet performance standards for new or upgraded systems may use monthly inventory controls and annual tank tightness testing until 22 December 1998, at which time the tank must be upgraded or permanently closed
	– tanks which hold less than 550 gal may use weekly tank gauging.
	
	Verify that underground piping, which routinely contains a regulated substance, has the following release detection done according to the methods in Appendix 9-3:
	
	– pressurized piping:
	  – equipped with automatic line leak detector
	  – annual tightness testing or monthly monitoring.
	– suction piping:
	  – line tightness testing every 3 yr or monthly monitoring
	  – no release detection system is needed for suction piping which is below grade and:
	  – operates at less than atmospheric pressure
	  – is sloped so that contents of pipe will roll back to tank when suction is released
	  – only one check valve is included in each suction line
	  – the check valve is located directly below and as close as practical to the suction pump.

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
UT.60 **UST RELEASES**	
UT.60.1. Facilities with UST systems are required to report releases under specific conditions (40 CFR 280.10(c) and 280.50).	Determine if the facility reported any and all releases which met the following criteria: – released regulated substances found at the UST site or in the surrounding area (such as the presence of free product or vapors in soils, basements, sewer and utility lines, and nearby surface waters – unusual operating conditions observed such as the erratic behavior of dispensing equipment or a sudden loss of product unless it is determined the problem lies in the equipment but it is not leaking and is immediately repaired or replaced – monitoring results indicate a possible release. Verify that the implementing agency was notified within 24 h (or time period specified by the implementing agency) of the release. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
UT.60.2. Facilities must investigate and confirm all suspected releases of a regulated substances requiring reporting within 7 days unless corrective action is started immediately as detailed in 40 CFR 280.60 through 280.67 (40 CFR 280.10(c) and 280.52).	Verify that tightness testing is done within 7 days of a suspected release to determine whether a leak is in the tank or the delivery piping. Verify that, if environmental contamination is the basis for suspecting a leak, and the tightness test does not indicate that a leak exists, a site check is done that measures for the presence of a release in the areas where contamination is most likely to be present. (NOTE: If the results indicate that a leak has occurred corrective actions must be started.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
	(NOTE: If the tightness test does not indicate a leak and environmental contamination is not the basis for suspecting a release, no further investigation is needed.) (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
UT.60.3. Facilities with a confirmed release from petroleum or hazardous substance USTs are required to perform specific initial response actions within 24 h of a release (40 CFR 280.60 and 280.61).	Verify that facility personnel are aware of the following initial response actions: – the release is reported – immediate action is taken to prevent further release of the regulated substance into the environment – fire, explosion, and vapor hazards are identified and mitigated. (NOTE: These requirements do not apply to excluded USTs (see the definitions) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.) (NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST holding a hazardous material at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)
UT.60.4. Facilities with a confirmed release from petroleum or hazardous substance USTs are required to perform specific initial abatement measures and site checks unless directed to do otherwise by the implementing agency (40 CFR 280.60 and 280.62).	Verify that the following actions are performed: – as much of the substance as is necessary to prevent further release is removed from the UST system – visual inspection of aboveground releases or exposed belowground releases is done and further migration of the released substance into surrounding soils and groundwaters is prevented – monitoring and mitigation of any fire and safety hazards caused by vapors or free product is done – hazards from contaminated soils that are excavated or exposed are remedied

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	– measurements are done for the presence of a release where the contamination is most likely to be present unless the presence and source of the release has previously been confirmed – an investigation is done for the presence of free product and the removal of free product is done as soon as possible. Verify that, within 20 days after release confirmation, a report is submitted to the implementing agency summarizing the initial abatement measures, site checks, and the resulting information and data collected. (NOTE: These requirements do not apply to excluded USTs (see the definitions) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.) (NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST holding a hazardous material at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)
UT.60.5. Facilities with a confirmed release from petroleum or hazardous substance USTs are required to assemble information about the site and nature of the release unless exempted by the implementing agency (40 CFR 280.60 and 280.63).	Verify that the following information is collected: – data on the nature and estimated quantities of the release – data from available sources and/or site investigations concerning surrounding population, water quality, use and approximate locations of wells potentially affected, subsurface soil conditions, locations of subsurface sewers, climatological conditions, and land use – results of site check – results of free product investigation. Verify that, within 45 days of the release confirmation, this information is submitted to the implementing agency in a manner that demonstrates the applicability and technical adequacy or according to a format required by the implementing agency. (NOTE: These requirements do not apply to excluded USTs (see the definitions) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.) (NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST holding a hazardous material at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
UT.60.6. Facilities with a confirmed release from petroleum or hazardous substance USTs where site investigations have indicated free product must, to the maximum extent possible as required by the implementing agency, remove the free product (40 CFR 280.60 and 280.64).	Determine if there are any release sites at the facility where free product has been confirmed. Verify that free product removal is done so that the spread of contamination is minimized. Verify that, unless exempted by the implementing agency, within 45 days after confirming a release, a free product removal report is submitted to the implementing agency that includes the following: – the name of the person responsible for implementing the free product removal measures – the estimated quantity, type, and thickness of free product observed or measured – the type of free product recovery system used – whether there will be any onsite or offsite discharges during the recovery operation and where this discharge will be located – the type of treatment used for any discharge during the recovery operation and where this discharge will be located – the steps taken to obtain any required permits – the disposition of the recovered free product. (NOTE: These requirements do not apply to excluded USTs (see the definitions) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.) (NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST holding a hazardous material at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)
UT.60.7. Facilities with a confirmed release from petroleum or hazardous substance USTs are required to perform an investigation for soil and groundwater contamination (40 CFR 280.60 and 280.65).	Verify that an investigation of the release, the release site, and possibly affected surrounding areas has been done and identified if any of the following conditions exists: – evidence that groundwater wells have been affected – free product is evident – evidence that contaminated soil is in contact with groundwater – the implementing agency requests an investigation. Verify that the results of the investigation are submitted to the implementing agency according to a time schedule defined by the implementing agency. (NOTE: These requirements do not apply to excluded USTs (see the

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	definitions) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.) (NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST holding a hazardous material at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
UT.65 **DEFERRED USTs** **UT.65.1.** Deferred UST systems (see definition) are required to meet specific standards (40 CFR 280.10(c) and 280.11) **[Revised January 1999]**.	Verify that deferred UST systems (whether single or double-walled) are not installed to store regulated substances unless: – releases due to corrosion or structural failure will be prevented for the operational life of the system – they are cathodically protected against corrosion, constructed of non-corrodible materials, steel clad with a noncorroding material, or designed to prevent release – they are constructed or lined with material that is compatible with the stored substance. (NOTE: UST sites without corrosion protection may be installed at a site that is determined by a corrosion expert not to be corrosive enough to cause it to have a release due to corrosion during its operating life. Records pertaining to this deferral must be kept for the life of the tank.) Verify that deferred systems meet the standards concerning release response and action for USTs containing petroleum or a hazardous substance found in 40 CFR 280.60 through 280.67 (see checklist items UT.60.2 through UT.60.7). (NOTE: The following types of USTs are deferred USTs: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
UT.70 **UST DOCUMENTATION**	
UT.70.1. Facilities with USTs are required to meet specific reporting requirements (40 CFR 280.10(c) and 280.34(a)).	Verify that the facility has submitted the following when applicable: – notifications of new USTs – release reports – planned or complete corrective actions – notice of closure or change-in-service. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
UT.70.2. Facilities with USTs are required to meet specific record keeping requirements (40 CFR 280.10(c), 280.34(b), 280.34(c), 280.45, and 280.74).	Verify that records are kept of the following: – a corrosion expert's analysis of site corrosion potential if corrosion protection equipment is not used – documentation of operation of corrosion protection equipment – documentation of repairs – closure records – results of any site investigations. Verify that records are available at one of the following: – at the UST site and immediately available for inspection – at a readily available alternative site and provided for inspection. Verify that records are kept as follows: – all written performance claims pertaining to any release detection system used for 5 yr from the date of installation – the results of any sampling, testing, or monitoring for 1 yr except the tank tightness results are kept until the next tank tightness test – written documentation of calibration, maintenance, repair of

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
	release detection equipment permanently located onsite at least 1 yr after the servicing is done – schedules of required calibration and maintenance provided by the release detection equipment manufacturer for 5 yr after the date of installation. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
UT.75 **CHANGES-IN-SERVICE OR CLOSURE OF USTs** **UT.75.1.** USTs which are put out of service temporarily must have continued maintenance (40 CFR 280.10 (c) and 280.70).	Determine if the facility has any out-of-service USTs. Verify that proper maintenance is being performed for the following: – corrosion protection – release detection. Verify that, if the UST has been out-of-service for near or over 1 yr, plans have been made for permanent closure. (NOTE: If the UST is empty, release detection is not required.) (NOTE: An empty UST is one which has no more than 2.5 cm (1 in.) of residue or less than 0.3 percent by weight of total capacity of the UST system.) Verify that, if a UST system is closed for 3 mo or more, the vent lines are open and functioning and all other lines, pumps, manways, and ancillary equipment are capped and secured. Verify that, if the UST has been out-of-service for more than 12 mo and does not meet the standards for new or upgraded USTs, it is permanently closed unless the implementing agency has provided an extension. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
UT.75.2. Notification must be given to the implementing agency for any closure or change in service 30 days in advance or within a reasonable time frame as determined by the implementing agency (40 CFR 280.10(c) and 280.71(a)).	Determine if the facility is planning to close or change any USTs. Verify that notification of changes were given within 30 days. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
UT.75.3. UST closure must be done according to specific requirements (40 CFR 280.10(c) and 280.71 (b)).	Verify that, if there are any closed USTs or USTs in the process of being closed at the facility, one of the following methods is used: – it is removed from ground – it is left in place with the contents removed, and filled with an inert solid material and closing it to all future outside access. Verify that tanks being permanently closed are emptied and cleaned by removing all liquids and accumulated sludges. Determine if there are any possible abandoned USTs and if there are plans to close the UST off in an appropriate manner. Determine if a site assessment was made to ensure that no releases to the environment have occurred by reviewing records. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
UT.75.4. Prior to a change-in-service, tanks must be emptied and cleaned and a site assessment conducted (40 CFR 280.10(c) and 280.71(c)).	Determine if there are any tanks which the facility has continued to use to store a nonregulated substance (a change-in-service). Verify that, prior to the change, the tank was emptied and cleaned. Verify that, prior to the change, a site assessment was done. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
UT.75.5. Prior to permanent closure or change-in-service, measurements must be made for the presence of a release where contamination is most likely to be present at the site (40 CFR 280.10(c) and 280.72).	Verify that measurements for the presence of a release have been done. (NOTE: These requirements are met if one of the leak detection methods outlined in 40 CFR 280.43(e) and 280.43(f) have been met (see checklist items UT.45.1, UT.50.1, and UT.50.2).) (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

COMPLIANCE CATEGORY: UNDERGROUND STORAGE TANK (UST) MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS: September 1999**
UT.75.6. Facilities with UST systems closed prior to 22 December 1988 must assess the excavation zone and close the UST according to cur rent standards when directed to do so by the implementing agency (40 CFR 280.10(c) and 280.73).	Determine if the facility has any USTs which were closed prior to 22 December 1988. Verify that the excavation zone of these USTs has been assessed and cleanup done as needed. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
UT.75.7. Excavation zone assessment records shall be maintained for 3 yr (40 CFR 280.10(c) and 280.74).	Verify that excavation zone assessment records are maintained for 3 yr in one of the following ways: – by the facility – at the implementing agency if they cannot be maintained at the closed facility. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

Appendix 9-1

UST Applicability Guide

Type of UST	Applicable CFR Citation	Checklist #'s
Underground Storage Tanks as defined in 40 CFR 280.12 (see definitions)	40 CFR 280	all
Excluded USTs (see definitions)	none	UT.55.1
Deferred USTs (see definitions)	40 CFR 280.11	UT.65.1
USTs storing fuel for emergency generators	40 CFR 280.20 through 280.22	UT.10, UT.15.1 through UT.15.4
	280.30 through 280.34	UT.15.5, UT.25.1, UT.25.2, UT.30.1, UT.35.1, UT.70.1, UT.70.2
	280.50 through 280.53	UT.25.2, UT.60.1, UT.60.2
	280.60 through 280.67	UT.60.3 through UT.60.7
	280.70 through 270.74	UT.70.2, UT.75.1 through UT.75.7

Appendix 9-2

Schedule for Phase-In of Release Detection
[Deleted January 1999]

Appendix 9-3

Release Detection Requirements for USTs and Underground Piping (40 CFR 280.41 through 280.43)

A. UST Options (see NOTE for additional guidance)

1. **Inventory control:** Product inventory control must be conducted monthly to detect a release of at least 1.0 percent of flow-through plus 130 gal on a monthly basis in the following manner:
   i. inventory volume measurements for regulated substance inputs, withdrawals, and the amount still remaining in the tank are recorded each operating day
   ii. the equipment used is capable of measuring the level of product over the full range of the tanks height to the nearest one-eighth of an inch
   iii. the regulated substance inputs are reconciled with delivery receipts by measurements of the tank inventory volume before and after delivery
   iv. deliveries made through a drop tube that extends to within one foot of the tank bottom
   v. product dispensing is metered and recorded within the local standards of product withdrawn
   vi. the measurement of any water level in the bottom of the tank is made to the nearest one-eight of an inch at least once a month.
2. **Manual gauging:** Manual tank gauging must meet the following requirements:
   i. tank liquid level measurements are taken at the beginning and end of a period of at least 36 h during which no liquid is added to or removed from the tank
   ii. level measurements are based on an average of two consecutive stick readings at both the beginning and end of the period
   iii. the equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest one-eighth of an inch
   iv. a leak is suspected and subject to the requirements of subpart E which include release reporting and investigation if the variation between beginning and ending measurements exceeds the weekly or monthly standards of Table A below
   v. only tanks of 550 gal or less nominal capacity may use this as a sole method of release detection. Tanks of 551 to 2000 gal may also use inventory control (see paragraph 1 in this appendix). Tanks of greater than 2000 gal nominal capacity may not use this method to meet release detection requirements.

Table A

Nominal Tank Capacity	Weekly Standard (one test)	Monthly Standard (average of four)
550 gal or less	10 gal	5 gal
551-1000 gal	13 gal	7 gal
1001-2000 gal	26 gal	13 gal

3. **Tank tightness testing:** Tank tightness testing must be capable of detecting a 0.1 gal/h leak rate from any portion of the tank that routinely contains product while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table.
4. **Tank automatic gauging:** Equipment for automatic tank gauging that tests for the loss of product and conducts inventory control; must meet the following requirements:
   i. the automatic product level monitor test can detect a 0.2 gal/h leak rate from any portion of the tank that routinely contains product
   ii. inventory control is conducted according to requirements (see para 1 above).
5. **Vapor monitoring:** Testing or monitoring for vapors within the soil gas of the excavation zone must meet the following requirements:
   i. the materials used as backfill are sufficiently porous (e.g., gravel, sand, crushed rock) to easily allow diffusion of vapors from releases into the excavation area
   ii. the stored regulated substance, or a tracer compound placed in the tank system, is sufficiently volatile (e.g., gasoline) to result in a vapor level that is detectable by the monitoring devices located in the excavation zone in the event of a release from the tank
   iii. the measurement of vapors by the monitoring device is not rendered inoperative by the groundwater, rainfall, or soil moisture or other unknown interferences so that a release could go undetected for more than 30 days
   iv. the level of background contamination in the excavation zone will not interfere with the method used to detect releases from the tank
   v. the vapor monitors are designed and operated to detect any significant increase in concentration above background of the regulated substance stored in the tank system, a component or components of that substance, or a tracer compound placed in the tank system
   vi. in the UST excavation zone, the site is assessed to ensure compliance with the requirements of paragraph 5 subparagraph i through iv above and to establish the number and positioning of monitor wells that will detect any releases within the excavation zone from any portion of the tank that routinely contains product
   vii. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.
6. **Groundwater monitoring:** Testing or monitoring for liquids in the groundwater must meet the following requirements:
   i. the regulated substance stored is immiscible in water and has a specific gravity of less than one
   ii. groundwater is never more than 20 ft from the ground surface and the hydraulic conductivity of the soil(s) between the UST system and the monitoring wells or devices is not less than 0.01 cm/s (e.g., the soil should consist of gravels, coarse to medium sands, coarse silts, or other permeable materials
   iii. the slotted portion of the monitoring well casing must be designed to prevent migration of natural soils or filter pack into the well and to allow entry of regulated substance on the water table into the well under both high and low groundwater conditions
   iv. monitoring wells should be sealed from the ground surface to the top of the filter pack
   v. monitoring wells or devices intercept the excavation zone or are as close to it as is technically feasible
   vi. the continuous monitoring devices or manual methods used can detect the presence of at least one-eight of an inch of free product on top of the groundwater in the monitoring wells
   vii. within and immediately below the UST system excavation zone, the site is assessed to ensure compliance with the requirements of paragraphs 6 i-v above and to

establish the number and positioning of monitoring wells or devices that will detect releases from any portion of the tank that routinely contains product

viii. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.

7. **Interstitial monitoring:** Interstitial monitoring between the UST system and a secondary barrier immediately around or beneath it may be used, but only if the system is designed, constructed and installed to detect a leak from any portion of the tank that routinely contains product and also meets one of the following requirements:
   i. for double-walled systems, the sampling or testing method can detect a release through the inner wall in any portion of the tank that routinely contains product
   ii. for UST systems with a secondary barrier within the excavation zone, the sampling or testing method used can detect a release between the UST system and the secondary barrier
      a. the secondary barrier around or beneath the UST system consists of artificially constructed material that is sufficiently thick and impermeable (at least 10^{-6} cm/s for the regulated substance stored) to direct a release to the monitoring point and permit its detection
      b. the barrier is compatible with the regulated substance stored so that a release from the UST system will not cause a deterioration of the barrier allowing a release to pass through undetected
      c. for cathodically protected tanks, the secondary barrier must be installed so that it does not interfere with the proper operation of the cathodic protection system
      d. the groundwater, soil moisture, or rainfall will not render the testing or sampling method used inoperative so that a release could go undetected for more than 30 days
      e. the site is assessed to ensure that the secondary barrier is always above the groundwater and not in a 25 yr flood plain, unless the barrier and monitoring designs are for use under such conditions
      f. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.
   iii. for tanks with an internally fitted liner, an automated device can detect a release between the inner wall of the tank and the liner. The liner is compatible with the substance stored.
8. **Other methods:** Any other type of release detection method, or combination of methods, can be used if:
   i. it can detect a 0.2 gal/h leak rate or a release of 150 gal within a month with a probability of detection of 0.95 and a probability of false alarm of 0.05
   ii. the implementing agency may approve another method, if it can be demonstrated that this method can detect releases as effectively as the methods listed in this appendix

(NOTE: The following are alternatives on the above listings for UST release detection options:

1. USTs meeting the requirements in 40 CFR 280.20 for new tanks (see checklist items UT.15.1 through UT.15.4) and the monthly inventory requirements in A1 and A2 above can use tank tightness testing as outlined in A3 at least every 5 yr until 22 December 1998, or until 10 yr after the tank is installed or upgraded under 40 CFR 280.21(b) (see checklist item UT.10.1).
2. USTs that do not meet the standards of 40 CFR 280.20 or 280.21 (see checklist items UT.10.1 through UT.15.4) may use monthly inventory as outlined in A1 or A2 and annual tank tightness testing done according to A3 until 22 December 1998 when the tank must be upgraded or permanently closed.
3. USTs with a capacity of 550 gal or less may use weekly tank gauging done according to A2.)

B. Underground Piping Options

1. **Automatic line detectors:** Methods that alert the operator to the presence of a leak by restricting or shutting off the flow of regulated substances through piping, or triggering an audible or visual alarm may be used only if they detect leaks of 3 gal/h at 10 lb/in.^{2} line pressure within 1 h. An annual test of the operation of the leak detector must be conducted in accordance with the manufacturer's requirements.
2. **Line tightness testing:** A periodic test of piping may be conducted only if it can detect a 0.1 gal/h leak one and one-half times the operating pressure.
3. **Applicable tank methods:** The methods outlined in A5 through A8 may be used if they are designed to detect a release from any portion of the underground piping that routinely contains regulated substances.

(**NOTE:** The following is additional information on the above listings for underground piping release detection options:

1. Pressurized piping must meet both of the following:
   a. be equipped with an automatic line leak detector as outlined in B1
   b. have an annual line tightness test done according to B2 or have monthly monitoring done in accordance with B3.
2. Underground suction piping must either have a line tightness test done according to B2 at least every 3 yr or use a monthly monitoring method in accordance with B3. No release detection is required for suction piping that is designed and constructed to meet the following standards:
   a. the belowgrade piping operates at less than atmospheric pressure
   b. the belowgrade piping is sloped so that the contents of the pipe will drain back into the storage tank if the suction is released
   c. only one check valve is included in each suction line
   d. the check valve is located directly below and as close as practical to the suction pump
   e. a method is provided that allows compliance with these standards to be readily determined.)

SECTION 10

WASTEWATER MANAGEMENT

U. S. ECAH, September 1999

A. Applicability

This section includes regulations, responsibilities, and compliance requirements associated with wastewater discharge at FWS facilities. Wastewater discharge can include any of the following:

1. sanitary wastewater discharge directly to a receiving stream, or through an FWS treatment facility
2. sanitary or industrial wastewater discharge to a publicly owned treatment works (POTW) or other non-FWS facility
3. stormwater runoff from operational areas of the facility to a receiving stream or water body
4. industrial or storm wastewater drained to an industrial waste reservoir.

Most FWS facilities have wastewater discharge of one kind or another; therefore, this section will be applicable to most facilities.

B. Federal Legislation

- *The Federal Water Pollution Control Act.* This act, commonly known as the *Clean Water Act* (CWA), as amended 4 February 1987, 33 U.S. Code (USC) 1251-1387, Public Law (PL) 100-4, governs the control of water pollution in the nation. The objective of the act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Federal agencies are required to comply with all Federal, state, interstate, and local water pollution control requirements both substantively and procedurally (33 USC 1323(a)).

- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards.* This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

- Federal regulations used to develop the checklist include:

    - EO 12088, *Federal Compliance with Pollution Control Standards.*
    - 40 CFR 122, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System.*
    - 40 CFR 136, *Guidelines Establishing Test Procedures for the Analysis of Pollutants.*
    - 40 CFR 403, *General Pretreatment Standards for New and Existing Sources.*
    - 40 CFR 503, *Standards for the Use or Disposal of Sewage Sludge.*

C. State/Local Regulations

States normally have wastewater discharge legislation and regulations which require permitting similar to the National Pollution Discharge Elimination System (NPDES) program. The state is often delegated authority to administer the NPDES permits for discharges in their state. These permits are often joint permits issued pursuant to both Federal CWA and state legislation. In some cases, the state will not administer the NPDES program and will issue a state permit even though a NPDES permit has been issued by the U.S. Environmental Protection Agency (USEPA). The states and the USEPA normally cooperate in the permit issuance process to insure that the two permits are consistent, but there may be differences in monitoring requirements and the number of pollutants limited. These requirements normally do not conflict, but may require additional sampling and dual reporting.

States also have more stringent requirements for wastewater treatment plant operations. Many states have sewage treatment plant (STP) operator licensing and certification programs which require that an operator pass an exam and have a required amount of experience.

Local entities (counties, cities) may also have enforceable wastewater discharge limitations which regulate discharges to a POTW. Local limitations often include pH, temperature, and concentrations of various organic and inorganic compounds. Major industrial operations which discharge to an offsite POTW will be subjected to pretreatment permits issued by the POTW, state, or USEPA as appropriate.

D. FWS/DOI Manuals

No applicable manuals final as of the publication of this handbook.

E. Key Compliance Requirements

- NPDES Permits - Facilities with point source discharges and/or treatment works treating domestic sewage are required to have a Federal NPDES permit if located in states without a USEPA approved NPDES permit program. Facilities that are dischargers of stormwater associated with an industrial activity are required to apply for an individual permit, apply for a permit through a group application, or seek coverage under a promulgated stormwater general permit. Facilities must meet the sampling requirements stipulated by NPDES permits (40 CFR 122.1(b)(3) and 122.26(c)).

- Treatment Works - Facilities must not discharge into a treatment works any pollutant that would cause pass through or interference. Facilities shall not introduce pollutants into a treatment works that create a fire or explosion hazard, cause corrosive structural damage, have a pH below 5.0, or are solid or viscous enough to cause obstructions. Facilities are required to notify the treatment works immediately of any discharge, including any slug loadings, that could cause problems to the treatment works (40 CFR 403.5 and 403.12(f)).

- Operation and Maintenance of a Treatment Works - Treatment plant supervisors are required to maintain operating logs and records that are posted daily and are neat and legible. Treatment plants are required to be operated in accordance with all design parameters (40 CFR 403.12(f)).

- Land Application of Sludge - 40 CFR 503 details the pollutant concentrations, cumulative loading rates, and other restrictions pertinent to the land application of sludge that is generated during the treatment of domestic sludge in a treatment works.

- Surface Disposal of Sewage Sludge - The operation, management, monitoring, and closure requirements for units used for the surface disposal of sewage sludge are outlined in 40 CFR 503.20 through 503.28.

- Incineration of Sewage Sludge - Facilities with incinerators that fire sewage sludge must meet specific emissions standards for beryllium emissions, mercury emissions, and hydrocarbons. The incinerators are required to have continuous monitoring devices for hydrocarbons and oxygen in the exit gas, and continuous monitoring for combustion temperature as specified by the permitting authority. Assorted reports are required to be submitted and records kept (40 CFR 503.40 through 503.48).

- Recordkeeping - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

F. Key Compliance Definitions

- *Active Sewage Sludge Unit* - a sewage sludge unit that has not closed (40 CFR 503.21(a)).

- *Aerobic Digestion* - the biochemical decomposition of organic matter in sewage sludge into CO_2 and water by microorganisms in the presence of air (40 CFR 503.31(a)).

- *Agricultural Land* - land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture (40 CFR 503.11(a)).

- *Agronomic Rate* - the whole sludge application rate (dry weight basis) designed (40 CFR 503.11(b)):
    1. to provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land
    2. to minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the groundwater.

- *Air Pollution Control Device* - one or more processes used to treat the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(a)).

- *Anaerobic Digestion* - the biochemical decomposition of organic matter in sewage sludge into methane gas and CO_2 by microorganisms in the absence of air (40 CFR 503.31(b)).

- *Annual Pollutant Loading Rate* - the maximum amount of a pollutant that can be applied to a unit area of land during a 365-day period (40 CFR 503.11(c)).

- *Annual Whole Sludge Application Rate* - the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period (40 CFR 503.11(d)).

- *Apply Sewage Sludge or Sewage Sludge Applied To The Land* - means land application of sewage sludge (40 CFR 503.9(a)).

- *Aquifer* - a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding groundwater to wells or springs (40 CFR 503.21(b)).

- *Auxiliary Fuel* - fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel (40 CFR 503.41(b)).

- *Base Flood* - a flood that has a 1 percent chance of occurring in any given year (i.e., a flood with a magnitude equaled once in 100 yr) (40 CFR 503.9(b)).

- *Bulk Sewage Sludge* - sewage sludge that is not sold or given away in a bag or other container for application to the land (40 CFR 503.11(e)).

- *Class 1 Sludge Management Facility* - any POTW, as defined in 40 CFR 501.2, required to have an approved pretreatment program under 40 CFR 403.8(a) (including any POTW located in a state that has elected to assume local program responsibilities pursuant to 40 CFR 403.10(e)) and any treatment works treating domestic sewage, as defined in 40 CFR 122.2, classified as a Class 1 sludge management facility by the USEPA Regional Administrator, or, in the case of approved state programs, the Regional Administrator in conjunction with the state Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

- *Class A Sludge* - when one of the following method is used, it is considered Class A with respect to pathogens (40 CFR 503.32(a)(3):
  - **Alternative 1.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number/gram (MPN/g) of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

    The temperature of the sewage sludge that is used or disposed shall be maintained at a specific value for a period of time. When the percent solids of the sewage sludge is 7 percent or higher, the temperature of the sewage sludge shall be 50 °C [122 °F] or higher; the time period shall be 20 min or longer; and the temperature and time period shall be determined using the following equation, except when small particles of sewage sludge are heated by either warmed gases or an immiscible liquid.

$$D = \frac{131{,}700{,}000}{10^{0.1400t}} \quad \text{Eq. (2)}$$

    where, D = time in days. t = temperature in °C.

    When the percent solids of the sewage sludge is 7 percent or higher and small particles of sewage sludge are heated by either warmed gases or an immiscible liquid, the temperature of the sewage sludge shall be 50 °C [122 °F] or higher; the time period shall be 15 s or longer; and the temperature and time period shall be determined using the above equation.

    When the percent solids of the sewage sludge is less than 7 percent and the time period is at least 15 s, but less than 30 min, the temperature and time period shall be determined using the above equation.

When the percent solids of the sewage sludge is less than 7 percent; the temperature of the sewage sludge is 50 °C [122 °F] or higher; and the time period is 30 min or longer, the temperature and time period shall be determined using the below equation.

$$D = \frac{50{,}070{,}000}{10^{0.1400t}} \quad \text{Eq. (3)}$$

where, D = time in days. t = temperature in °C.

- **Alternative 2.** Either the density of fecal coliform in the sewage sludge is less than 1000 MPN g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

  The pH of the sewage sludge that is used or disposed shall be raised to above 12 and shall remain above 12 for 72 h.

  The temperature of the sewage sludge shall be above 52 °C [125.6 °F] for 12 h or longer during the period that the pH of the sewage sludge is above 12.

  At the end of the 72 h period during which the pH of the sewage sludge is above 12, the sewage sludge shall be air dried to achieve a percent solids in the sewage sludge greater than 50 percent.

- **Alternative 3.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

  The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains enteric viruses.

  When the density of enteric viruses in the sewage sludge prior to pathogen treatment is less than one Plaque-forming Unit per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses until the next monitoring episode for the sewage sludge.

  When the density of enteric viruses in the sewage sludge prior to pathogen treatment is equal to or greater than one Plaque-forming Unit per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses when the density of enteric viruses in the sewage sludge after pathogen treatment is less than one Plaque-forming Unit per 4 g of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the enteric virus density requirement are documented.

  After the enteric virus reduction is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to enteric viruses when the values for

the pathogen treatment process operating parameters are consistent with the values or ranges of values documented.

The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains viable helminth ova.

When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is less than 1 per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova until the next monitoring episode for the sewage sludge.

When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is equal to or greater than 1 per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova when the density of viable helminth ova in the sewage sludge after pathogen treatment is less than 1 per 4 g of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the viable helminth ova density requirement are documented.

After the viable helminth ova reduction is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to viable helminth ova when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented.

- **Alternative 4.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

  The density of enteric viruses in the sewage sludge shall be less than one Plaque-forming Unit per 4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f), unless otherwise specified by the permitting authority.

  The density of viable helminth ova in the sewage sludge shall be less than 1 per 4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f), unless otherwise specified by the permitting authority.

- **Alternative 5.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or given away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

Sewage sludge that is used or disposed shall be treated in one of the Processes to Further Reduce Pathogens described in Appendix B of 40 CFR 503.

- **Alternative 6.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or given away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

  Sewage sludge that is used or disposed shall be treated in a process that is equivalent to a Process to Further Reduce Pathogens, as determined by the permitting authority.

- *Class B Sludge* - when one of the following methods is used, it is considered Class B with respect to pathogens (40 CFR 503.32(b)(2):
  - **Alternative 1.** Seven samples of the sewage sludge are collected at the time the sewage sludge is used or disposed. The geometric mean of the density of fecal coliform in the samples must be less than either 2 million MPN/g of total solids (dry weight basis) or 2 million Colony Forming Units (CFU)/g of total solids (dry weight basis).
  - **Alternative 2.** Sewage sludge that is used or disposed shall be treated in one of the Processes to Significantly Reduce Pathogens described in Appendix B of 40 CFR 503.
  - **Alternative 3.** Sewage sludge that is used or disposed is be treated in a process that is equivalent to a Process to Significantly Reduce Pathogens, as determined by the permitting authority.

- *Contaminate An Aquifer* - to introduce a substance that causes the MCL for nitrate in 40 CFR 141.11 to be exceeded in groundwater or that causes the existing concentration of nitrate in groundwater to increase when the existing concentration of nitrate in the groundwater exceeds the maximum contaminant label for nitrate in 40 CFR 141.11 (40 CFR 503.21(c)).

- *Continuous Discharge* - a discharge which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities (40 CFR 123.3).

- *Control Efficiency* - the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator (40 CFR 503.41(c)).

- *Cover* - soil or other material used to cover sewage sludge placed on an active sewage sludge unit (40 CFR 503.21(d)).

- *Cover Crop* - a small grain crop, such as oats, wheat, or barley, not grown for harvest (40 CFR 503.9(d)).

- *Cumulative Pollutant Loading Rate* - the maximum amount of an inorganic pollutant that can be applied to an area of land (40 CFR 503.11(f)).

- *Daily Discharge* - the discharge of a pollutant measured during a calendar day or any 24-h period that reasonably represents the calendar day for purposes of sampling (40 CFR 122.2).

- *Density Of Microorganisms* - the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge (40 CFR 503.31(c)).

- *Direct Discharge* - the discharge of a pollutant (40 CFR 122.2).

- *Discharge of Pollutant* - the addition of any pollutant to navigable waters from any point source and any addition of any pollutant to the waters of the contiguous zone or the ocean zone or the ocean from any point source, other than from a vessel or other floating craft (40 CFR 401.11(h)).

- *Dispersion Factor* - the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack (40 CFR 503.41(d)).

- *Displacement* - the relative movement of any two sides of a fault measured in any direction (40 CFR 503.21(e)).

- *Domestic Septage* - either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receive either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant (40 CFR 257.2).

- *Domestic Sewage* - waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works (40 CFR 503.9(g)).

- *Effluent Limitations* - any restriction established by the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources, other than new sources, into navigable waters, the waters of the contiguous zone, or the ocean (40 CFR 401.11(i)).

- *Environmentally Sensitive Area* - an area of environmental importance which is in or adjacent to navigable waters (49 CFR 194.5).

- *Excluded Sludge* - The following are types of sludge and activities which are exempted from meeting the requirements outlined in 40 CFR 503:
    1. processes used to treat domestic sewage or processes used to treat sewage sludge prior to final use except for the standards on pathogen and vector reduction in 40 CFR 503.32 and 503.33
    2. sewage sludge co-fired in an incinerator with other wastes or for the incinerator in which sewage sludge and other waste are co-fired
    3. sludge generated at an industrial facility during the treatment of industrial wastewater, including sewage sludge generated during the treatment of industrial wastewater combined with domestic sewage
    4. sewage sludge determined to be hazardous
    5. sewage sludge with a concentration of PCBs equal to greater than 50 mg/kg of total solids (dry weight basis)
    6. ash generated during the firing of sewage sludge in a sewage sludge incinerator
    7. grit (i.e., sand, gravel, cinders, or other material with high specific gravity) or screenings (e.g., relatively large materials such as rags) generated during preliminary treatment of domestic sewage in a treatment works
    8. sludge generated during the treatment of either surface water or ground water used for drinking water
    9. commercial septage, industrial septage, a mixture of domestic septage and commercial septage, or a mixture of domestic septage and industrial septage (40 CFR 503.6).

- *Fault* - a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to strata on the other side (40 CFR 503.21(f)).

- *Feed Crops* - crops produced primarily for consumption by animals (40 CFR 503.9(j)).

- *Feedlot* - a concentrated, confined animal or poultry growing operation for meat, milk, or egg production, or stabling in pens or houses wherein the animals or poultry are fed at the place of confinement and crop or forage growth or production is not sustained in the area of confinement (40 CFR 412.11(b)).

- *Fiber Crops* - crops such as flax and cotton (40 CFR 503.9(k)).

- *Final Cover* - the last layer of soil or other material placed on a sewage sludge unit at closure (40 CFR 503.21(g)).

- *Fluidized Bed Incinerator* - an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas (40 CFR 503.41(e)).

- *Forest* - a tract of land thick with trees and underbrush (40 CFR 503.11(g)).

- *Holocene Time* - the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present (40 CFR 503.21(h)).

- *Hourly Average* - the arithmetic mean of all measurements, taken during 1 h. At least two measurements must be taken during the hour (40 CFR 503.41(f)).

- *Incineration* - the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device (40 CFR 503.41(g)).

- *Indirect Discharge* - the introduction of pollutants into a POTW from any nondomestic source regulated under section 307(b), (c), or (d) of the act (40 CFR 403.3(g)).

- *Industrial Activities* - in relation to stormwater runoff, industrial activities include (40 CFR 122.26(b)(14)(i) through 122.26(b)(14)(xi)):
    1. facilities subject to stormwater effluent limitations guidelines, new source performance standards under 40 CFR subchapter N
    2. facilities classified as Standard Industrial Classification 24 (except 2434), 26 (except 265 and 267), 28 (except 283), 29, 311, 32 (except 323) 35, 344, 373
    3. facilities classified as Standards Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations and oil and gas explorations, production, processing, or treatment operations, or transmission facilities that discharge stormwater contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate product, finished products, by-products or waste products located on the site of such operations
    4. hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under *Resource Conservation and Recovery Act* (RCRA), Subpart C
    5. landfills, land application sites, and open dumps that receive or have received industrial wastes, including those sites that are subject to Federal regulation
    6. facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but no limited to those classified as Standard Industrial Classification 5015 and 5093
    7. steam electric power generating facilities, including coal handling sites

8. transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25, 43, 44, 45, and 5171) which have vehicle maintenance shops, equipment cleaning operations, or airport de-icing operations
9. treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludges that are located within the confines of the facility with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program. Not included are farmlands, domestic gardens, or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with section 405 of the CWA
10. construction activity including clearing, grading, and excavation activities except operations that result in the disturbance of land less than 5 acres of total land area which are not part of a larger common plan of development or sale
11. facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and which are not otherwise included in categories 1 - 10).

- *Industrial User* - a source of indirect discharge (40 CFR 403.3(h)).

- *Industrial Wastewater* - wastewater generated in a commercial or industrial process (40 CFR 503.9(n)).

- *Interference* - a discharge which, alone or in conjunction with one or more discharges from other sources inhibits or disrupts the POTW and causes a violation of any requirement of the POTW's NPDES permit (40 CFR 403.3(i)).

- *Job Shop* - a facility which owns not more than 50 percent (annual area basis) of the materials undergoing metal finishing (40 CFR 433.11).

- *Land Application* - the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil (40 CFR 503.11(h)).

- *Land With a High Potential For Public Exposure* - land that the public uses frequently. This includes, but is not limited to, a public contact site and a reclamation site located in a populated area (e.g., a construction site located in a city) (40 CFR 503.31(d)).

- *Land With a Low Potential For Public Exposure* - land the public uses infrequently. This includes, but is not limited to, agricultural land, forest, and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area) (40 CFR 503.31(e)).

- *Leachate Collection System* - a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit (40 CFR 503.21(i)).

- *Liner* - soil or synthetic material that has a hydraulic conductivity of 1×10^{-7} cm/s [3×10^{-8} in./s] or less (40 CFR 503.21(j)).

- *Lower Explosive Limit For Methane Gas* - the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 °C [77 °F] and atmospheric pressure (40 CFR 503.21(k)).

- *Management Practices (MPs)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.

- *Monthly Average (Incineration of Sewage Sludge)* - the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month (40 CFR 503.41(h)).

- *Monthly Average (Land Application of Sewage Sludge)* - the arithmetic mean of all measurements taken during the month (40 CFR 503.11(i)).

- *Municipality* - a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities: created by or under state law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under section 208 of the CWA, as amended). The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in section 201(e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use, or disposal of sewage sludge. (40 CFR 503.9(o)).

- *National Pretreatment Standard* - any regulation containing pollutant discharge limits promulgated by the USEPA (40 CFR 403.3(j)).

- *Navigable Waters* - all navigable waters of the United States, tributaries of navigable waters of the United states, interstate waters, intrastate lakes, rivers, and streams which are utilized by interstate travelers for rivers, and streams which are utilized by interstate travelers for recreational or other purposes, intrastate lakes, rivers, and streams from which fish or shellfish are taken and sold in interstate commerce and intrastate lakes, rivers, and streams which are utilized for industrial purposes by industries in interstate commerce. Navigable waterways do not include prior converted cropland (40 CFR 401.11(l)).

- *New Source* - in relation to NPDES permits, any building, structure, facility, or installation from which there is or may be a discharge of pollutants the construction of which commenced (40 CFR 122.2 and 122.29(b)):
    1. after promulgation of standards of performance under section 306 of CWA which are applicable to such sources
    2. after proposal of standards of performance in accordance with section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with section 306 within 120 days of their proposal.

  The following are the criteria for new source determination:
    1. it is constructed at a site at which no other source is located
    2. it totally replaces the process or production equipment that causes the discharge of pollutants at an existing sources
    3. its processes are substantially independent of an existing source at the same site.

- *New Source* - any building, structure, facility, or installation from where there is or may be the discharge of pollutants, the construction of which is commenced after the publication of proposed regulations prescribing a standards of performance under section 306 of the CWA, which will be applicable to such source as such standards is thereafter promulgated in accordance with section 306 of the act (40 CFR 401.11(e)).

- *NPDES Permit* - a permit granted by USEPA to a direct discharger which permits wastewater discharge to a watercourse in accordance with the conditions of the permit. NPDES means National Pollutant Discharge Elimination System (40 CFR 403.3(l)).

- *Open Lot* - pens or similar confinement areas with dirt, concrete (or paved or hard) surface wherein animals or poultry are substantially or entirely exposed to the outside environment except for possible small portions affording some protection by windbreaks, small shed-type shade areas (40 CFR 412.11(f)).

- *Other Container* - either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of 1 metric ton (1.1 short tons) or less (40 CFR 503.11(j)).

- *pH* - the logarithm of the reciprocal of the hydrogen ion concentration (40 CFR 503.31(g)).

- *Pass Through* - a discharge which exits the POTW into waters in quantities or concentrations which, alone or in conjunction with one or more discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (40 CFR 403.3(n)).

- *Pasture* - land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover (40 CFR 503.11(k)).

- *Pathogenic Organisms* - disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova (40 CFR 503.31(f)).

- *Person* - an individual, association, partnership, corporation, municipality, state or Federal agency, or an agent or employee thereof (40 CFR 503.9(q)).

- *Person Who Prepares Sewage Sludge* - either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge (40 CFR 503.9(r)).

- *Place Sewage Sludge or Sewage Sludge Placed* - means disposal of sewage sludge on a surface disposal site (40 CFR 503.9(s)).

- *Point Source* - any discernible confined and discrete conveyance including but not limited to a pipe, ditch, channel, or conduit from which pollutants are or may be discharged (40 CFR 401.11(d)).

- *Pretreatment* - the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW (40 CFR 403.3(q)).

- *Process Generated Wastewater* - in relation to feedlots, this is water directly or indirectly used in the operation of a feedlot for any or all of the following: spillage or overflow from animal or poultry watering systems; washing, cleaning, or flushing pens, barns, manure pits, or other feedlot facilities; direct contact swimming, washing, or spray cooling or animals; and dust control (40 CFR 412.11(d)).

- *Process Wastewater* - any water which during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, or waste product (40 CFR 401.44(q)).

- *Process Wastewater for Feedlots* - any process generated wastewater and any precipitation (rain or snow) which comes into contact with any manure, litter, or bedding, or any other raw material or intermediate or final material or product used in or resulting from the production of animals or poultry or direct production (40 CFR 412.11(c)).

- *Public Contact Site* - land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses (40 CFR 503.11(l)).

- *Publicly Owned Treatment Works (POTW)* - a treatment works which is owned by the state or a municipality. This includes any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes, and other conveyances only if they convey waste to a POTW (40 CFR 403.3(o)).

- *Qualified Groundwater Scientist* - an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in groundwater hydrology and related fields, as may be demonstrated by state registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding groundwater monitoring, pollutant fate and transport, and corrective action (40 CFR 503.21(l)).

- *Range Land* - open land with indigenous vegetation (40 CFR 503.11(m)).

- *Reclamation Site* - drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites (40 CFR 503.11(n)).

- *Risk Specific Concentration* - the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of the site where the sewage sludge incinerator is located (40 CFR 503.41(i)).

- *Runoff* - rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off of the land surface (40 CFR 503.9(v)).

- *Seismic Impact Zone* - an area that has a 10 percent or greater probability that the horizontal ground level acceleration of the rock in the area exceeds 0.10 gravity once in 250 yr (40 CFR 503.21(m)).

- *Sewage Sludge* - solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage, scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludges in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works (40 CFR 257.2).

- *Sewage Sludge Feed Rate* - either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365-day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located (40 CFR 503.41(j)).

- *Sewage Sludge Incinerator* - an enclosed device in which only sewage sludge and auxiliary fuel are fired (40 CFR 503.41(k)).

- *Sewage Sludge Unit* - land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 CFR 122.2 (40 CFR 503.21(n)).

- *Sewage Sludge Unit Boundary* - the outermost perimeter of an active sewage sludge unit (40 CFR 503.21(o)).

- *Specific Oxygen Uptake Rate (SOUR)* - the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in the sewage sludge (40 CFR 503.31(h)).

- *Stack Height* - the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 m [213.25 ft]. When the difference is greater than 65 m [213.25 ft], stack height is the creditable stack height determined in accordance with 40 CFR 51.100(ii) (40 CFR 503.41(l)).

- *Store or Storage Of Sewage Sludge* - the placement of sewage sludge on land on which the sewage sludge remains for 2 yr or less. This does not include the placement of sewage sludge on land for treatment (40 CFR 503.9(y)).

- *Stormwater Discharge Associated with an Industrial Activity* - the discharge from any conveyance which is used for collecting and conveying stormwater and which is directly related to manufacturing, processing or raw materials storage areas at any industrial plant. This does not include discharges from facilities excluded from the NPDES program. For the categories of industries identified in the definition for industrial activities, the item numbers 1 through 10, the term includes, but is not limited to stormwater discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters; sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to stormwater. For item number 11 in the definition for industrial activities the term only includes only stormwater discharges from all the areas (except access roads and rail lines) that are listed in the previous sentence where materials handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to stormwater (40 CFR 122.26(b)(14)).

- *Surface Disposal Site* - an area of land that contains one or more active sewage sludge units (40 CFR 503.21(p)).

- *Total Hydrocarbons* - the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane (40 CFR 503.41(m)).

- *Total Solids* - the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 °C [217.4 to 221 °F] (40 CFR 503.31(i)).

- *Treat or Treatment Of Sewage Sludge* - the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge (40 CFR 503.9(z)).

- *Treatment Works* - either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature (40 CFR 503.9(aa)).

- *Unstabilized Solids* - organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process (40 CFR 503.31(j)).

- *Unstable Area* - land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement (40 CFR 503.21(q)).

- *Vector Attraction* - the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents (40 CFR 503.31(k)).

- *Volatile Solids* - the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 °C [1022 °F] in the presence of excess air (40 CFR 503.31(l)).

- *Wet Electrostatic Precipitator* - an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(n)).

- *Wetlands* - those areas that are inundated or saturated by surface water or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (40 CFR 503.9(bb)).

- *Wet Scrubber* - an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(o)).

WASTEWATER MANAGEMENT

GUIDANCE FOR CHECKLIST USERS

	REFER TO CHECKLIST ITEMS:
All Facilities	WW.1.1 through WW.1.4
NPDES Permits	WW.10.1 through WW.10.6
Treatment Works	
Operations	WW.20.1
Discharges to POTWs/FOTWs	
General	WW.25.1 through WW.25.9
Dredging	WW.43.1
Effluent Limitations	
Feedlots	WW.45.1
Individual Sewage Systems	
Septic Tanks	WW.55.1
Land Application of Sludge	
General	WW.105.1 through WW.105.7
Vectors and Pathogens	WW.110.1 through WW.110.5
Notifications	WW.115.1 through WW.115.5
Monitoring	WW.120.1 and WW.120.2
Recordkeeping and Reporting	WW.125.1 through WW.125.8
Surface Disposal of Sludge	
General	WW.135.1 through WW.135.7
Monitoring and Documentation	WW.140.1 through WW.140.6
Sludge Incineration	WW.150.1 through WW.150.8

WASTEWATER MANAGEMENT

Records To Review

- NPDES Permits
- NPDES Permit renewal applications (if expire within 180 days)
- Discharge monitoring reports for the past year
- Laboratory records and procedures and USEPA QA results
- Monthly operating reports for wastewater treatment facilities
- Flow monitoring calibration certification and supporting records
- Special reports, certifications, etc., required by NPDES permit
- Spill Prevention Control and Countermeasure (SPCC) plan
- Sewage treatment plant operator certification
- Sewer and storm drain layout
- Local service use permit
- Notification to local POTW
- Stormwater pollution prevention plan
- Pretreatment Permits

Physical Features To Inspect

- Discharge outfall pipes
- Wastewater treatment facilities
- Industrial treatment facilities
- Streams, rivers, open waterways
- Floor and sink drains (especially in industrial areas)
- Stormwater collection points (especially in industrial areas)
- Oil storage tanks
- Oil/water separators
- Wastewater generation points

COMPLIANCE CATEGORY: WASTEWATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
WW.1 **ALL FACILITIES**	
WW.1.1. The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), interagency agreements, or equivalent state enforcement actions is required to be examined (a finding under this checklist item will have the enforcement action/ identifying information as the citation).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, interagency agreements, or equivalent state enforcement actions.
WW.1.2. FWS facilities are required to comply with state and local wastewater regulations (EO 12088, Section 1-1).	Verify that the facility is complying with state and local water quality requirements. Verify that the facility is operating according to permits issued by the state or local agencies. (NOTE: Issues typically regulated by state and local agencies include: – nonpoint sources – NPDES permits – wastewater – monitoring and recordkeeping for NPDES permitted sources – certification requirements for laboratories analyzing samples – wastewater treatment plant operator certification – sludge disposal – pretreatment standards – discharges to sewage treatment facilities – industrial wastewater – septic tanks – stormwater pollution prevention plan – stormwater discharges.)
WW.1.3. Facilities will	Determine if any new regulations concerning wastewater have been

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meet regulatory requirements issued since the finalization of this handbook (a finding under this checklist item will have the citation of the new regulation as a basis of finding).	issued since the finalization of this handbook. Verify that the facility is in compliance with newly issued regulations.
WW.1.4. FWS facilities should report all NOVs to the Region and the Environmental and Facility Compliance (EFC) (MP) **[Revised June 1998].**	Determine if the facility has received an NOV relating to wastewater management. Verify that the NOV was reported to the Region and the EFC.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
WW.10 **NPDES PERMITS**	
WW.10.1. Facilities with point source discharges are required to have a Federal NPDES permit if located in states without an USEPA approved NPDES permit program (40 CFR 122.1(b)(3)).	Determine if the facility is located in a state with an USEPA approved NPDES permit program. Verify the facility has obtained the proper permits for point source discharges. Verify that the facility is operating according to permit requirements such as: – monitoring/sampling – concentrations of discharge constituents – recordkeeping – reports. Verify that expiring permits are renewed within 180 days of the expiration date. (NOTE: The Regional Administrator may require the facility to have a permit for the use/disposal of sewage sludge as necessary to protect public health.) (NOTE: Stormwater runoff may be addressed in the NPDES permit.) (NOTE: Look for oil/water separators and washracks that discharge directly to the environment.)
WW.10.2. Facilities with NPDES permits are required to meet specific reporting requirements (40 CFR 122.41(l)).	Verify that the facility gives notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility when: – the alteration or addition might meet one of the criteria for determining if the facility is a new source (see definitions) – the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged (this applies to pollutants which are not subject to requirements in the permit or other notifications) – the alteration or addition results in a significant change in the installations sludge use or disposal practices. Verify that the facility notifies the Director of any planned changes at

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	the permitted facility or activity which may result in noncompliance with permit requirements. Verify that monitoring is reported as required in the permit. Determine if the facility is monitoring more frequently than required. Verify that, if the facility is monitoring more frequently than required by permit, these results are also being reported. Verify that reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule on the permit are submitted no later than the specified date. Verify that noncompliance which might endanger health or the environment is reported as follows: – orally within 24 h from the time the facility becomes aware of noncompliance – in writing within 5 days of the time the facility becomes aware of noncompliance.
WW.10.3. Facilities which are dischargers of stormwater associated with an industrial activity (see definitions) are required to apply for an individual permit, apply for a permit through a group application, or seek coverage under a promulgated stormwater general permit (40 CFR 122.26(c) and 122.26 (g)).	Determine if the facility is discharging stormwater associated with an industrial activity or construction activity. Verify that an application has been submitted for a permit. Verify that all requirements of the permit such as a stormwater pollution prevention plan are being implemented. Verify that, if the facility has submitted to be part of a FWS/DOI group application, stormwater is not currently covered by the existing facility permit. Verify that after 1 October 1994, facilities with discharges composed entirely of stormwater that are not already required to obtain a permit have applied for a permit. (NOTE: In the case of discharges composed entirely of stormwater, a permit may not be required for discharges of agricultural stormwater runoff that is exempted from the definition of point source. Additionally in the case of discharges composed entirely of stormwater, a permit may not be required for discharges of stormwater runoff from mining operations or oil and gas exploration, production, processing or treatment operations or transmission

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	facilities composed entirely of flows which are from conveyances used for collecting and conveying precipitation runoff and which are not contaminated.)
WW.10.4. Even where not covered by NPDES permits, stormwater discharge on the facility should be uncontaminated and periodic surveillance of these discharges should be completed (MP).	Determine which drains at the facility are connected to the storm sewer and the location of all outfalls and discharge points. Determine if there is evidence of contamination (oil sheen, discoloration, etc.) by physical review of stormwater discharge sites. Verify that oil/water separators connected to the permitted storm sewer outfall on the facility are operating properly and correctly maintained. Determine if there is evidence of contaminated waste streams discharging to floor drains connected to the stormwater discharge system by checking major industrial shops or industrial areas physically, such as: – battery shop – corrosion control – engine shop – motor pool – paint shop – plating shop – pesticide shop – petroleum, oils, and lubricants (POL) area – golf courses – washracks – contractor storage areas. Determine if there are any plans to eliminate the discharge.
WW.10.5. Samples must be collected in accordance with proper collection, testing, preservation, and shipping procedures in Standard Methods for the Examination of Water and Wastewater (40 CFR 136.1 through 136.4).	Verify that: – proper sample containers are used – samples are refrigerated to 4 °C during compositing – proper preservation techniques are used – flow-proportioned samples are obtained where required by permit – sample holding times prior to analyses conform with requirements. – the chain of custody is maintained from sampling point through analytic testing to results (essential if litigation occurs).

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WW.10.6. Analytical testing must be done in accordance with USEPA approved analytical procedures (40 CFR 136.3).	Verify that results are reported in facility's self-monitoring report. Determine if: – a USEPA approved analytical testing lab was used – proper approval was obtained from state/USEPA if alternate analytical procedures are used – parameters other than those required by the permit are analyzed – satisfactory calibration and maintenance of instruments and equipment is done – quality control procedures are used – duplicate samples are analyzed – spiked samples are used – a commercial laboratory is used – the commercial laboratory is state certified (states with formal certification program).

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
TREATMENT WORKS **WW.20** **Operations** **WW.20.1.** Personnel engaged or employed in the operation and maintenance of water pollution control facilities should be trained in safety and occupational hazards (MP).	Determine if periodic refresher training is conducted by interviewing operating maintenance staff. Verify that training is conducted by reviewing training records.

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REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:** **September 1999**
DISCHARGES TO POTWs/FOTWs **WW.25** **General**	
WW.25.1. Facilities must not discharge into a POTW/FOTW any pollutant which would cause pass through or interference (40 CFR 403.5(a) and 403.5(c)(2)).	Determine the following: – what point source discharges are at the facility – what drains in the facility lead to the treatment works – what do personnel pour down the drains leading to the treatment works – what types of materials are located in areas where spills may reach the drains to the treatment works. Determine which drains are connected to the sanitary sewer draining to a POTW/FOTW and possible pollutants entering these drains. Verify that the facility is not discharging to a POTW/FOTW pollutants which would cause a pass through or interference (see definitions). Determine if the POTW/FOTW has imposed any pretreatment standards or reporting requirements on the facility and verify that they are being met.
WW.25.2. Facilities shall not introduce specific pollutants into a POTW/FOTW (40 CFR 403.5(b)).	Verify that pollutants, which create a fire or explosion hazard in the POTW/ FOTW, including but not limited to, waste streams with a closed cup flashpoint of less than 140 °F (60 °C) are not being discharged from the facility to a POTW/FOTW. Verify that pollutants, which will cause corrosive structural damage to the POTW/FOTW, are not being discharged from the facility to a POTW/FOTW. Verify that in no case are discharges with a pH below 5.0 released. Verify that solid or viscous pollutants in amounts which will cause obstruction to the flow are not being discharged to the POTW/FOTW. Examples are: – fish cleaning stations – pieces of metals, rubber, and wood from shops – sand and sediment. Verify that no pollutants, including pollutants with oxygen demand,

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	are released at a flow rate or concentration that will cause interference with the POTW/FOTW. Verify that heat in amounts that would inhibit biological activity at the POTW/ FOTW resulting in interference is not discharged, including: – scrubber water – boiler blow down. (NOTE: In no case will the temperature of discharges result in a temperature at the POTW/FOTW of greater than 40 °C (104 °F).) Verify that petroleum, oil, nonbiodegradable cutting oil, or products of mineral oil origin are not discharged in amounts that would result in a pass through or interference (specifically check maintenance areas and oil/water separators). Verify that pollutants which would result in the presence of toxic gases, vapors, or fumes within the POTW/FOTW in quantities that would cause acute worker health and safety problems are not discharged. Verify that no trucked or hauled pollutants are discharged except at discharge points designated by the POTW/FOTW. Determine if the facility has been granted any exemptions or variances concerning its discharges.
WW.25.3. Facilities are required to notify the POTW/FOTW immediately of any discharge, including slug loading, that could cause problems to the POTW/FOTW (40 CFR 403.12(f)).	Verify that personnel at the facility are aware of the need to notify the POTW/FOTW of any discharge that would cause problems.
WW.25.4. FOTWs may only accept wastewaters that meet one of four conditions (FFCA, PL 102-386, Section 3023(a)).	Verify that all wastewater being discharged to the FOTW meets one of the following conditions: – a pretreatment standard is established for the source and the source is in compliance with the standard – a schedule for establishing a pretreatment standard for the source has been set by the USEPA and the schedule dictates that the

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	standard will be in place by October 1999. Additionally, the source is in compliance with the standard after the effective date of the standard – the industrial source meets land disposal restriction standards under 40 CFR 268 – the industrial activity generates less than 100 kg [220 lb] of hazardous waste per month.
WW.25.5. Industrial users that are not required to meet a categorical pretreatment standard are required to submit specific reports (40 CFR 403.12(h)).	Verify that, if the facility is a significant noncategorical industrial user, it submits a description of the nature, concentration, and flow of pollutants to the Control Authority. Verify that the report is submitted at least once every 6 mo. (NOTE: If the sampling is being done by the POTW itself, no report is necessary.) (NOTE: The Control authority is: the POTW/FOTW, if the POTW's/FOTW's submission for its pretreatment program has been approved or the Approval Authority if the submission has not been approved.)
WW.25.6. Industrial users are required to notify the POTW, the Regional Waste Management Division Director, and State hazardous waste authorities in writing of any discharges into the POTW of a substance which would be a hazardous waste (40 CFR 403.12(p)).	Determine if the facility is discharging any substance to a POTW which would be classified as a hazardous waste if disposed of in any other manner. Verify that, if they are discharging a hazardous waste to the POTW, the correct people have been notified of the following: – the name of the waste – the type of discharge (batch, continuous, or other) – USEPA hazardous waste number. Verify that, if the discharge is more than 100 kg/mo, the following information is also included to the extent that it is known and readily available: – identification of the hazardous constituents – an estimate of the mass and concentrations of the constituents in the waste discharges during the calendar month.
WW.25.7. FOTWs cannot accept the discharge of	Verify that, if any hazardous waste is discharged to the FOTW, it is

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any acutely hazardous wastes (FFCA, PL 102-386, Section 3023(b)).	not acutely hazardous waste.
WW.25.8. All industrial users are required to notify the POTW/ FOTW in advance of any substantial change in the volume or character of pollutants in their discharge (40 CFR 403.12(j)).	Verify that the sources of industrial discharge on the facility notify the POTW/ FOTW in advance of any substantial changes in the volume or character of pollutants in their discharge, including any listed or characteristic hazardous wastes.
WW.25.9. Industrial users and POTWs/ FOTWs are required to keep specific reports (40 CFR 403.12(o)).	Verify that the facility and the POTW/FOTW keeps records of all information resulting from monitoring activities. Verify that the records include for all samples the following information: – the date, exact place, methods, and time of sampling and the names of the person or persons taking the samples – the dates analyses were performed – who performed analyses – the analytical techniques, methods used – the results of the analyses. Verify that records are kept for 3 yr and are signed and certified by the facility equivalent of a responsible corporate officer.

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WW.43 **DREDGING** **WW.43.1.** Department of the Army permits are required for the discharge of dredged or fill material into waters of the United States (33 CFR 323.3(a)(b)).	Determine if the facility has wetlands. Verify that any activities involving dredging and filling wetlands are permitted by the Army Corps of Engineers. (NOTE: Fill material means any material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a water body. The term does not include any pollutant discharged into the water primarily to dispose of waste, as that activity is regulated under Section 402 of CWA.)

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EFFLUENT LIMITATIONS **WW.45** **Feedlots** **WW.45.1.** Feedlots, except those for ducks, are required to meet specific effluent limitation standards (40 CFR 412.12 through 412.16).	Determine if the facility operates a feedlot. Verify that there is no discharge of process wastewater pollutants to navigable waters. (NOTE: For existing sources, when best practicable control technology (BPT) currently available is used, process waste pollutants may be discharged to navigable waters whenever rainfall events, either chronic or catastrophic, cause an overflow of process wastewater from a facility designed, constructed, and operated to contain all process generated wastewaters plus the runoff from a 10-yr, 24-h rainfall event for the location of the point source. If the best available technology economically achievable is used it is a 25-yr, 24-h rainfall event.) (NOTE: For new sources, process waste pollutants may be discharged to navigable waters whenever rainfall events, either chronic or catastrophic, cause an overflow of process wastewater from a facility designed, constructed, and operated to contain all process generated wastewaters plus the runoff from a 25-yr, 24-h rainfall event for the location of the point source.) Verify that, for existing sources, the following pretreatment standard is met for discharge to a POTW: – fecal coliform: no irritation – BOD_5: no irritation.

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INDIVIDUAL SEWAGE SYSTEMS **WW.55** **Septic Tanks** **WW.55.1.** Septic tanks should be periodically pumped of solids and sludge (MP).	Verify that septic tanks have periodically been pumped of solids and sludge. (NOTE: Pumping is typically recommended every 3 yr.)

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LAND APPLICATION OF SLUDGE **WW.105** **General**	(NOTE: Checklist items WW.105.1 through WW.150.7 apply only to sludge generated during the treatment of domestic sewage in a treatment works. For exclusions see the definitions of the term Excluded Sludge. A summary of the important compliance dates is found In Appendix 10-1.)
WW.105.1. Representative samples of sewage sludge applied to the land, placed on a surface disposal site, or fired in a sewage sludge incinerator, are required to be collected and analyzed (40 CFR 503.8).	Verify that the following types of facilities meet the standards outlined in 40 CFR 503: – the treatment works treats only domestic sewage – the treatment works is designed for domestic sewage treatment but also treats some industrial wastewaters – the treatment works is designed for industrial wastewater treatment and it only treats domestic sewage at any one time during operations and then the resulting sewage sludge has to meet 40 CFR 503 – the treatment works generates domestic septage only – the installation further changes the quality or treats (e.g., composting of sewage sludge) the sewage sludge of domestic septage received from a generator of sewage sludge/domestic septage for land application and is therefore a preparer of sewage sludge. (NOTE: If the facility treatment works meets any of the following, the requirements in 40 CFR 503 do not apply: – it treats industrial wastewaters only – it is an industrial wastewater treatment plant that also treats domestic sewage along with the industrial wastewater – it generates a combination of: – domestic septage and commercial septage (i.e., grease from grease traps) – domestic septage and industrial septage – commercial septage and industrial septage.) Determine if the facility applies sewage sludge to the land, places it on a surface disposal site, or fires it in a sewage sludge incinerator. Verify that the sludge is analyzed prior to application, placement, or firing for the following: – enteric viruses – fecal coliforms – helminth ova

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	– inorganic pollutants – salmonella bacteria – SOUR – total, fixed, and volatile solids.
WW.105.2. Depending on when the last time bulk sewage sludge subject to the cumulative loading rates in Appendix 10-2 was last applied to a site specific standards have to be met (40 CFR 503.12(e)(2)).	Verify that personnel contacted the permitting authority in the State to determine if bulk sewage sludge which has to meet the standards in Appendix 10-2 has been applied to the site since 20 July 1993. (NOTE: If sludge subject to these standards has not been applied to the site since 20 July 1993, the cumulative amount for each pollutant in Appendix 10-2 may be applied.) Verify that, if bulk sewage sludge subject to these standards has been applied since 20 July 1993 and the cumulative amount of each pollutant applied to the site is known, the known cumulative amount is used to determine the additional amount of each pollutant that can be applied. (NOTE: If the cumulative amount is not known, there shall be no further application to the site.)
WW.105.3. Bulk sewage sludge or sewage sludge sold or given away in a bag or other container must meet specific standards (40 CFR 503.10(e), 503.10 (f), 503.13(a)(1), 503.13(a)(4), and 503.14(e)).	Verify that, if the facility gives or sells bulk sewage sludge or sewage sludge in a bag or other container, it meets the pollutant concentration limits in Appendix 10-3. Verify that, if the facility gives or sells bulk sewage sludge in a bag or other container, it meets one of the following: – pollutant concentrations do not exceed the values identified in Appendix 10-4 – the product of the concentration of each pollutant in the sewage sludge and the annual whole sludge application rate for the sewage sludge does not cause the annual pollutant loading rates in Appendix 10-5 to be exceeded. Verify that a label is affixed to the bag or container or an information sheet provided to the person who receives the sewage sludge. Verify that the label or information sheet states: – the name and address of the person who prepared the sewage sludge – a statement that the application to land is prohibited except in

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	accordance with the instructions on the label or information sheet – the annual whole sludge application rate for the sewage sludge that does not cause any exceedance of the annual pollutant loading rates in Appendix 10-5. (NOTE: When sewage sludge or material derived from sewage sludge is sold or given away in a bag or other container and meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from the labeling requirements: – the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: – for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved – for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved – the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] – sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] – the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h – the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials – the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)

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WW.105.4. The application of bulk sewage sludge is not permitted in specific circumstances (40 CFR 503.14(a) through 503.14(c)).	Verify that bulk sewage sludge is not applied to the land if it is likely to adversely threaten an endangered species or its designated critical habitat. Verify that bulk sewage sludge is not applied to agricultural land, forest, a public contact site, or reclamation site that is flooded, frozen, or snow covered so that the bulk sewage sludge enters a wetland or other waters of the United States. Verify that bulk sewage sludge is not applied to agricultural land, forest, or a reclamation site that is 10 m [32.81 ft] or less from waters of the United States unless allowed by the permitting authority. (NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements: – the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: – for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved – for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved – the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] – sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge

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	is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] – the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h – the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials – the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)
WW.105.5. Bulk sewage sludge applied to agricultural land, forest, a public contact site, or a reclamation site must meet specific standards (40 CFR 503.12(b), 503.13(a)(2), and 503.14(d)).	Verify that the cumulative loading rate for each pollutant does not exceed the limits outlined in Appendix 10-2. Verify that the concentration of each pollutant in the sewage sludge does not exceed the concentration for the pollutant in Appendix 10-4. Verify that bulk sewage sludge is applied at a whole sludge application rate that is equal to or less than the agronomic rate for the bulk sewage sludge unless otherwise specified by a permitting authority. (NOTE: When bulk sewage sludge is applied to the land that meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from the requirements concerning Appendix 10-2 and the agronomic rate application: – the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: – for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved – for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage

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	sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved – the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] – sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40° C [114 °F] and the average temperature is higher than 45 °C [113 °F] – the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h – the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials – the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)
WW.105.6. Bulk sewage sludge applied to a lawn or home garden must not contain pollutants in excess of the limits in Appendix 10-4 (40 CFR 503.13(a)(3)).	Verify that, if bulk sewage sludge is applied to a lawn or home garden, it does not contain pollutants in excess of the limits in Appendix 10-4.
WW.105.7. The annual application rate for domestic septage applied to agricultural land, forest or a reclamation site must not exceed specific limits (40 CFR 503.12(c) and 503.13(c)).	Verify that the annual application rate for domestic septage applied to agricultural lands, forest or a reclamation site does not exceed the annual application rate calculated using the following equation: $$AAR = \frac{N}{0.0026}$$ AAR = Annual application rate in gallons per acre per 365-day period N = amount of nitrogen in pounds per acre per 365-day period needed by the crop or vegetation grown on the land.

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LAND APPLICATION OF SLUDGE **WW.110** **Vectors and Pathogens**	
WW.110.1. Bulk sewage sludge applied to agricultural land, forest, a public contact site or a reclamation site is required to meet specific standards for pathogens (40 CFR 503.15(a)(1), 503.32 (a), and 503.32(b)).	Verify that the sewage sludge meets the Class A or the Class B pathogen requirements (see definitions) and the following site restrictions: – food crops with harvested parts that touch the sewage sludge soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge – food crops with harvested parts below the surface of the land are not harvested for 20 mo after the application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil – food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil – food crops, feed crops, and fiber crops are not harvested for 30 days after application of the sewage sludge – animals are not allowed to graze for 30 days after application – turf grown on land where sewage sludge is applied is not harvested for 1 yr after application of sewage sludge when the turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the permitting authority – public access to land with a high potential for public exposure is restricted for 1 yr after application – public access to land with a low potential for public exposure is restricted for 30 days after application.
WW.110.2. Bulk sewage	Verify that one of the following vector reduction requirements are

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sludge applied to agricultural land, forest, a public contact site or a reclamation site is required to meet specific standards for vector attraction reduction (40 CFR 503.15(c)(1) and 503.33(b)(1) through 503.33(b)(10)).	met: – the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: – for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved. – for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved. – the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] – sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] – the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h – the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials – the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials – sewage sludge is injected below the surface of the land: – no significant amount of the sewage sludge is present on the land surface within 1 h after injection – when the sludge that is injected is Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process – sewage sludge applied to a land surface or placed on a surface

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	disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process.
WW.110.3. Bulk sewage sludge applied to a lawn or home garden must meet the Class A pathogen requirements and specific vector reduction requirements (40 CFR 503.15 (a)(2), 503.32(a), and 503.33(b)(1) through 503.33(b)(8)).	Verify that, for bulk sewage sludge, the Class A pathogen requirements (see definitions) are met. Verify that one of the following vector reduction requirements are met: – the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: – for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved. – for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved – the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] – sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] – the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h – the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials – the percent solids of sewage sludge that contains unstabilized

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	solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.
WW.110.4. Sewage sludge that is sold or given away in a bag or container must meet Class A pathogen requirements and specific vector reduction requirements (40 CFR 503.15(a)(3), 503.32 (a), and 503.33(b)(1) through 503.33(b)(8)).	Verify that, for sewage sludge that is sold or given away in a bag or container, it meets the Class A pathogen requirements (see Definitions). Verify that one of the following vector reduction requirements are met: – the mass of volatile solids in the sewage sludge is reduced by a mini mum of 38 percent – a 17 percent reduction of volatile solids when the 38 percent volatile solids reduction requirements cannot be met for an anaerobically digested sewage sludge and the vector reduction attraction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F] – a 15 percent reduction of volatile solids when the 38 percent volatile solids reduction requirements cannot be met for an aerobically digested sewage sludge and the vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has percent solids of two percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [68 °F] – the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] – sewage sludge is treated in an aerobic process for 14 days or longer and the temperature is higher than 40 °C [104 °F] and the average temperature of the sewage sludge is higher than 45 °C [113 °F] – the pH of the sewage sludge is raised to 12 or higher by alkali addition and, without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h – the percent solids of sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 percent based on the moisture content and total solids prior to mixing with other materials – the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.
WW.110.5. Domestic	Verify that one of the following requirements is met for pathogen

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septage that is applied to agricultural land, forest, or a reclamation site must meet specific pathogen requirements and vector reduction requirements (40 CFR 503.15(b), 503.15(d), 503.32 (c)(1), 503.32(c)(2), 503.33(b)(9), 503.33 (b)(10), and 503.33(b)(12)).	control: – the pH of the domestic septage is raised to 12 or higher by alkali addition, remaining 12 or higher for 30 min, and the following land restrictions are met: – food crops with harvested parts that touch the sewage sludge soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge – food crops with harvested parts below the surface of the land are not harvested for 20 mo after the application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil – food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil – food crops, feed crops, and fiber crops are not harvested for 30 days after application of the sewage sludge – site restrictions are followed: – food crops with harvested parts that touch the sewage sludge soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge – food crops with harvested parts below the surface of the land are not harvested for 20 mo after the application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil – food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil – food crops, feed crops, and fiber crops are not harvested for 30 days after application of the sewage sludge – animals are not allowed to graze for 30 days after application – turf grown on land where sewage sludge is applied is not harvested for 1 yr after application of sewage sludge when the turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the permitting authority – public access to land with a high potential for public exposure is restricted for 1 yr after application – public access to land with a low potential for public exposure is restricted for 30 days after application. Verify that one of the following vector attraction reduction

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	requirements is met:
	
	– sewage sludge is injected below the surface of the land:
	  – no significant amount of the sewage sludge is present on the land surface within 1 h after injection
	  – when the sludge that is injected is Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process
	– sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process
	– the pH of domestic septage is raised to 12 or higher by alkali addition and, without the addition of more alkali, remains at 12 or higher for 30 min.

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LAND APPLICATION OF SLUDGE **WW.115** **Notifications** **WW.115.1.** Persons who prepare bulk sewage sludge are required to provide specific notifications (40 CFR 503.10(b), 503.12(f), and 503.12(g)).	Verify that, if the facility prepare bulk sewage sludge, it provides the person applying the bulk sewage sludge the notices and necessary information needed to comply with the land application regulations. (NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements: – the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: – for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved – for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved – the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] – sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] – the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h – the percent solids of sewage sludge that does not contain

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	unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials – the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)
WW.115.2. Persons who prepare bulk sewage sludge that is applied to agricultural land, forest, a public contact site, or a reclamation site are required to provide users written notification of the total nitrogen on a dry weight basis (40 CFR 503.12(d)).	Determine if the facility prepares sewage sludge for application to agricultural land, forest, a public contact site, or a reclamation site. Verify that the facility provides users with written notification of the total nitrogen on a dry weight basis.
WW.115.3. Persons who apply bulk sewage sludge to the land are required to provide notice to the land owner or lease holder (40 CFR 503.10(b), 503.10(c), and 503.12 (h)).	Verify that notice is given that includes the information needed to verify compliance with the land application regulations. (NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements: – the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: – for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C. [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved – for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved

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	– the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] – sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] – the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h – the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials – the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)
WW.115.4. Facilities that prepare bulk sewage sludge that is used in a different state are required to provide written notice (40 CFR 503.12(i)).	Determine if the facility prepares sewage sludge for land application that is used in another state. Verify that written notification is prepared and provided to the permitting authority in the state of application that includes the following: – the location of each land application site – the approximate time period bulk sewage sludge will be applied to the site – the name, address, telephone number, and NPDES permit number (if appropriate) for the facility preparing the sludge – the name, address, telephone number, and NPDES permit number (if appropriate) for the facility applying the sludge.
WW.115.5. Facilities that apply bulk sewage sludge subject to the cumulative	Verify that, prior to the initial application of bulk sewage sludge that is subject to the cumulative loading rates in Appendix 10-2, notice is

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loading rates in Appendix 10-2 are required to provide written notice prior to the initial application of the sludge (40 CFR 503.10(b), 503.10(c), and 503.12(j)).	provided to the permitting authority for the state that includes: – the location of the land application site – the name, address, telephone number, NPDES permit number (if appropriate) of the facility applying the sludge. (NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements: – the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: – for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved – for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved – the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] – sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] – the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h – the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials – the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture

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	content and total solids prior to mixing with other materials.)

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LAND APPLICATION OF SLUDGE **WW.120** **Monitoring**	
WW.120.1. Monitoring for the limitations in Appendices 10-2 through 10-5, pathogen density in Class A and Class B pathogens, and vector attraction reduction requirements must be done according to the frequency in Appendix 10-6 (40 CFR 503.16 (a)).	Verify that monitoring for the limitations in Appendices 10-2 through 10-5, pathogen density in Class A and Class B pathogens, and vector attraction reduction requirements is done according to the frequency in Appendix 10-6. (NOTE: After the sewage sludge has been monitored for 2 yr, the permitting authority may reduce the frequency of monitoring.)
WW.120.2. In specific instances, when domestic sewage is applied to agricultural land, forest, or a reclamation site, each container of domestic septage applied to the land is required to be monitored for compliance (40 CFR 503.16 (b)).	Verify that each container of domestic septage is monitored if the pH has been raised to 12 or higher by alkali addition, and kept there for 30 min.

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LAND APPLICATION OF SLUDGE **WW.125** **Recordkeeping and Reporting**	

WW.125.1. When bulk sewage sludge is applied to the land or sold in a bag or container and it meets the requirements in Appendix 10-4, Class A pathogen requirements, and vector attraction reduction requirements, specific recordkeeping requirements must be met (40 CFR 503.17(a)(1)).	Determine if the facility applies bulk sewage sludge or sells or gives it away in a bag or container.
	
	Verify that it meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions), and one of the following vector attraction reduction requirements:
	
	– the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done:
	  – for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved
	  – for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [86 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved
	– the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [86 °F]
	– sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]
	– the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h
	
	– the percent solids of sewage sludge that does not contain

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	unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials – the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials. Verify that the following information is retained for 5 yr: – the concentration of each pollutant listed in Appendix 10-4 – a statement certifying which form of vector attraction reduction is being used and that Class A pathogen requirements are being met – a description of how the Class A pathogen requirements are being met – a description of how the vector attraction reduction is being met.

WW.125.2. When the facility derives material from sewage sludge for application and/or to sell or give away in a bag or container and it meets the requirements in Appendix 10-4, Class A pathogen requirements, and vector attraction reduction requirements, specific record keeping requirements must be met (40 CFR 503.17(a)(2)).	Determine if the facility derives material from bulk sewage sludge or sells or gives away material derived from sewage sludge in a bag or container.
	
	Verify that it meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions), and one of the following vector attraction reduction requirements:
	
	– the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done:
	  – for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved
	  – for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [86 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved
	– the SOUR for sewage sludge treated in an aerobic process is

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	equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [86 °F] – sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] – the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h – the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials – the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials. Verify that the following information is retained for 5 yr: – the concentration of each pollutant listed in Appendix 10-4 – a statement certifying which vector attraction reduction is being used and that Class A pathogen requirements are being met – a description of how the Class A pathogen requirements are being met – a description of how the vector attraction reduction is being met.
WW.125.3. When the bulk sewage sludge that meets the limitations in Appendix 10-4, the requirements concerning Class A pathogens and the vector attraction reduction requirements is applied to agricultural land, forest, a public contact site, or a reclamation site specific reporting requirements must be met (40 CFR 503.17(a)(3)).	Determine if the facility applies bulk sewage sludge to agricultural land, forest, a public contact site or reclamation site. Verify that it meets the requirements in Appendix 10-4, Class A pathogen requirements (see definitions) and one of the following vector attraction reduction requirements: – the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: – for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved – for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the

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	previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved – the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] – sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] – the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h – the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials – the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials. Verify that the following information is retained for 5 yr by the person who prepares the sludge: – the concentration of each pollutant listed in Appendix 10-4 – a statement certifying which vector attraction reduction is being used and that Class A pathogen requirements are being met – a description of how the Class A pathogen requirements are being met – a description of how the vector attraction reduction is being met. Verify that the following information is retained for 5 yr by the person who applies the sludge: – a statement certifying that appropriate management practices and application procedures are being used – a description of how required management practices are implemented – a description of how the vector reduction requirements are met.
WW.125.4. When the	Determine if the facility applies bulk sewage sludge to agricultural

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bulk sewage sludge meets the limitations in Appendix 10-4 and the requirements concerning Class B pathogens, and is applied to agricultural land, forest, a public contact site, or reclamation site specific reporting requirements must be met (40 CFR 503.17(a)(4)).	land, forest, a public contact site or reclamation site. Verify that it meets the requirements in Appendix 10-4 and Class B pathogen requirements (see definitions). Verify that the following information is retained for 5 yr by the person who prepares the sludge: – the concentration of each pollutant listed in Appendix 10-4 – a statement certifying which form of vector attraction reduction is being used and that Class A pathogen requirements are being met – a description of how the Class B pathogen requirements are being met – a description of how the vector attraction reduction is being met when it is used. Verify that the following information is retained for 5 yr by the person who applies the sludge: – a statement certifying that appropriate management practices and application procedures are being used – a description of how required management practices are implemented – a description of how site restrictions are being met – a description of how the vector reduction requirements are met when they are used.
WW.125.5. When bulk sewage sludge that meets the limitations in Appendix 10-2, is applied to agricultural land, forest, a public contact site, or reclamation site, specific reporting requirements must be met (40 CFR 503.17(a)(5)).	Determine if the facility applies bulk sewage sludge to agricultural land, forest, a public contact site or reclamation site. Verify that it meets the requirements in Appendix 10-2. Verify that the following information is retained for 5 yr by the person who prepares the sludge: – the concentration of each pollutant listed in Appendix 10-2 – a statement certifying which form of vector attraction reduction is being used and that pathogen requirements are being met – a description of how the pathogen requirements are being met – a description of how the vector attraction reduction is being met when used. Verify that the following information is retained indefinitely by the person who applies the sludge:

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	– the concentration of each pollutant listed in Appendix 10-2 – the number of hectares in each site upon which bulk sewage sludge is applied – the date and time bulk sewage sludge is applied to each site – the cumulative amount of each pollutant from Appendix 10-2 in the bulk sewage sludge applied to each site – amount applied to each site – a certification statement indicating that required information for each site has been obtained – a description of how the requirements to obtain information were met. Verify that the following information is retained for 5 yr by the person applying the sludge: – a statement certifying that appropriate management practices and application procedures are being used – a description of how required management practices are implemented – a certification statement that Class B pathogen requirements are being met – a description of how site restrictions are being met – a certification statement that vector reduction requirements are met – a description of how vector reduction requirements are being met.
WW.125.6. When bulk sewage sludge is given away or sold in a bag or container and it meets the requirements in Appendix 10-5, specific record keeping requirements must be met (40 CFR 503.17 (a)(6)).	Determine if the facility sells or gives bulk sewage sludge away in a bag or container. Verify that it meets the requirements in Appendix 10-5. Verify that the following information is retained for 5 yr by the person who prepares the sludge: – the annual whole sludge application rate for the sewage sludge that does not cause the annual pollutant rates in Appendix 10-5 to be exceeded – the concentration of each pollutant listed in Appendix 10-5 – a statement certifying which vector attraction reduction is being used and that Class A pathogen requirements are being met – a description of how the Class A pathogen requirements are being met – a description of how the vector attraction reduction is being met.
WW.125.7. When	Determine if the facility applies domestic septage to agricultural land,

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domestic septage is applied to agricultural land, forest, or a reclamation site, specific reporting requirements must be met (40 CFR 503.1(b)).	forest, a public contact site, or reclamation site. Verify that the following information is retained for 5 yr by the person who applies the domestic septage: – the location of each site on which domestic septage is applied – the number of acres in each site on which domestic septage is applied – the date and time of application at each site – the nitrogen requirements for the crop or vegetation grown on each site during a 365-day period – the rate in gal/acre per 365-day period at which domestic septage is applied to each site – a statement certifying which vector attraction reduction is being used and that pathogen requirements are being met – a description of how the Class A pathogen requirements are being met – a description of how the pathogen requirements are being met – a description of how the vector attraction reduction is being met.
WW.125.8. Class I sludge management facilities, POTW/ FOTWs with a design flow rate equal to or greater than 1 million gal/day [3,785,412 L/ day], and POTW/ FOTWs that serve 10,000 people or more are required to submit specific information to the permitting authority (40 CFR 503.18).	Verify that the following information is submitted to the permitting authority by 19 February of each year: – the concentration of each pollutant listed in Appendix 10-5 – a statement certifying which form of vector attraction reduction is being used and that Class A pathogen requirements are being met – a description of how the Class A pathogen requirements are being met – a description of how the vector attraction reduction is being met. Verify that the following information is submitted on 19 February of each year when 90 percent or more of any of the cumulative loading rates in Appendix 10-2 are met: – the concentration of each pollutant listed in Appendix 10-2 – the number of hectares in each site upon which bulk sewage sludge is applied – the date and time bulk sewage sludge is applied to each sites – the cumulative amount of each pollutant from Appendix 10-2 in the bulk sewage sludge applied to each site – amount applied to each site – a certification statement indicating that required information for each site has been obtained – a description of how the requirements to obtain information were

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SURFACE DISPOSAL OF SLUDGE **WW.135** **General**	(NOTE: The requirements concerning surface disposal of sludge do not apply to sewage sludge stored on the land or to the land on which sewage sludge is stored. It also does not apply to sewage sludge that remains on the land for longer than 2 yr when the facility who prepares the sewage sludge demonstrates that the land on which the sewage sludge remains is not an active sewage sludge unit. It also does not apply to sewage treated on the land or to the land on which the sewage sludge is treated (40 CFR 503.20(b) and 503.20(c).)
WW.135.1. An active sewage sludge unit that is located within 60 m [196.85 ft] of a fault that has displacement in Holocene time, is located in an unstable area, or located in a wetland is required to close by 19 February 1994 (40 CFR 503.22 (b)).	Determine if the facility has a sewage sludge unit that is located within 60 m [196.85 ft] of a fault that has displacement in Holocene time, is located in an unstable area, or is located in a wetland. Verify that the unit was closed by 19 February 1994 unless otherwise stipulated by the permitting authority.
WW.135.2. The facility is required to submit a written closure and post-closure plan that meets specific requirements to the permitting authority 180 days prior to the date of closure (40 CFR 503.22(c)).	Determine if the facility is planning on closing an active sewage sludge unit or has recently closed a sewage sludge unit. Verify that the closure and post-closure plan was submitted to the permitting authority at least 180 days in advance of closure and the plan contained the following: – a discussion of how the leachate collection system will be operated and maintained for 3 yr after closure if the unit has a liner and leachate collection system – a description of the system used to monitor for methane gas in the air in any structure within the surface disposal site and in the air at the property line – a discussion of how public access will be restricted for 3 yr after closure. – Verify that, if there are plans to turn the surface disposal site over to another owner, the facility notifies the subsequent owner that sewage sludge was placed on the land.
WW.135.3. Active	Verify that following concentrations are not exceeded in sewage

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sewage sludge units without a liner and leachate collection system are required to meet specific standards (40 CFR 503.23(a)(1) and 503.23(b)).	sludge placed on an active sewage sludge unit: – arsenic: 73 mg/kg – chromium: 600 mg/kg – nickel: 420 mg/kg. (NOTE: Amounts are based on a dry weight basis.)
WW.135.4. Active sewage sludge units without a liner and leachate collection system with a boundary less than 150 m [492.13 ft] from the property line of the surface disposal site are required to meet specific requirements (40 CFR 503.23(a)(2) and 503.23(b)).	Verify that the concentration of each pollutant listed in Appendix 10-7 are not exceeded in relation to the listed distances. (NOTE: At the time of the permit application, the owner/operator of the site may ask for site specific pollutant limits.)
WW.135.5. Sewage sludge units are required to be operated according to specific operation and management standards (40 CFR 503.24).	Verify that sewage sludge is not placed in an active sewage sludge unit if it is likely to adversely affect a threatened or endangered species or its critical habitat. Verify that active sewage sludge units: – do not restrict the flow of a base flood – are located 60 m [196.85 ft] or more from a fault that has displacement in Holocene time, unless otherwise specified by the permitting authority – are not located in an unstable area – it will not contaminate an aquifer – are not located in a wetland unless by permit. (NOTE: The results of a groundwater monitoring program developed by a qualified groundwater scientist or a certification by a qualified groundwater scientist will be used to demonstrate that sewage sludge placed on an active sewage sludge unit does not contaminate an aquifer.) Verify that, when a surface disposal site is located in a seismic impact zone, the unit is designed to withstand the maximum recorded

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	horizontal ground level acceleration. Verify that, for runoff, the following occurs: – the runoff is collected and disposed of in accordance with an NPDES permit – the runoff collection system has the capacity to handle runoff from a 24-h, 25-yr storm event. Verify that leachate is handled so that: – the leachate collection system for an active sewage sludge unit that has a liner and leachate collection system is operated and maintained during the period the sewage sludge unit is active and for 3 yr thereafter – leachate from an active sewage sludge unit that has a liner and a leachate collection system is collected and disposed of in accordance with the applicable requirements from when the unit is active and for 3 yr thereafter. Verify that the following occurs when a cover is placed on a sewage sludge unit: – the concentration of methane gas in the air in any structure within the surface disposal site of an active unit does not exceed 25 percent of the lower explosive limit for methane gas during the period that the unit is active and the concentration of the methane gas in air at the property line of the surface disposal site does not exceed the lower explosive limit for methane gas during the period that the sewage sludge unit is active – at closure when the final cover is placed the concentration of methane gas in air in any structure within any structure within the surface disposal site does not exceed 25 percent of the lower explosive limit for methane gas for 3 yr after the unit closes and the concentration of methane gas in air at the property line of the unit does not exceed the lower explosive limit for methane gas 3 yr after closure unless otherwise specified by the permitting authority. (NOTE: The lower explosive limit for methane is 5.0 percent by volume.) Verify that a food or feed crop or a fiber crop are not grown on an active sewage sludge unit unless it has been demonstrated to the permitting authority that through management practices, public health

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	and the environment are protected from any reasonably anticipated adverse effects. Verify that animals are not grazed on an active sewage sludge unit unless it has been demonstrated to the permitting authority that through management practices, public health and the environment are protected from any reasonably anticipated adverse effects. Verify that public access is restricted for the period that the surface disposal site contains an active unit, and for 3 yr after the last active sewage sludge unit in the surface disposal site closes.
WW.135.6. Class A or one of the Class B pathogen requirements (see definitions) must be met when placing sewage sludge on an active sewage sludge unit unless it is covered with soil or other material at the end of each operating day (40 CFR 503.25 (a)).	Determine if the sewage sludge meets Class A or one of the Class B pathogen requirements. Verify that, if the sludge does not meet pathogen requirements, it is covered with soil or other material at the end of each operating day.
WW.135.7. Vector attraction reduction must be done when sewage sludge or domestic septage is placed on an active sewage sludge unit (40 CFR 503.25(b) and 503.25(c)).	Verify that, when sewage sludge is placed on an active sewage sludge unit, one of the following vector attraction reduction requirements is done: – the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: – for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period are reduced by less than 17 percent, vector attraction reduction is achieved – for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [86 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period are reduced by less than 15 percent, vector attraction reduction is achieved

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	– the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [86 °F] – sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] – the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h – the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials – the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials – sewage sludge is injected below the surface of the land: – no significant amount of the sewage sludge is present on the land surface within 1 h after injection – when the sludge that is injected is Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process – sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process – the sewage sludge placed on an active sewage sludge unit is covered with soil or other material at the end of each operating day. Verify that, when domestic septage is placed on an active sewage sludge unit, one of the following vector attraction reduction requirements is done: – sewage sludge is injected below the surface of the land such

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	that: – no significant amount of the sewage sludge is present on the land surface within 1 h after injection – when the sludge that is injected in Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process – sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process – the sewage sludge placed on an active sewage sludge unit is covered with soil or other material at the end of each operating day – the pH of the domestic septage is raised to 12 or higher by alkali addition and, without the addition of more alkali, remains at 12 or higher for 30 min.

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SURFACE DISPOSAL OF SLUDGE **WW.140 Monitoring and Documentation**	
WW.140.1. Monitoring for pollutants, pathogens, and vector attraction reduction requirements for sewage sludge placed on an active sewage sludge unit must be done according to the frequency in Appendix 10-6 (40 CFR 503.26 (a)).	Verify that monitoring for pollutants, pathogens, and vector attraction reduction requirements for sewage sludge placed on an active sewage sludge unit is done according to the frequency in Appendix 10-6. (NOTE: The permitting authority may reduce the frequency of monitoring.)
WW.140.2. If, when domestic septage is placed on an active sewage sludge unit, the pH of the septage is raised to 12 or higher by alkali addition and remains at 12 or higher without alkali addition for 30 min, each container of domestic septage must be monitored (40 CFR 503.26(b)).	Verify that, when domestic septage is placed on an active sewage sludge unit and the pH of the septage is raised to 12 or higher by alkali addition and remains at 12 or higher without alkali addition for 30 min, each container of domestic septage is monitored.
WW.140.3. In specific circumstances air in structures within a surface disposal site and at property lines of the surface disposal site are required to be monitored continuously for methane gas (40 CFR 503.26(c).	Verify that continuous monitoring occurs during the period that the surface disposal site contains an active sewage sludge unit on which the sewage sludge is covered and for 3 yr after a unit closes when a final cover is placed on the sewage sludge.
WW.140.4. Specific	Verify that the person who prepares sewage sludge retains the

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recordkeeping requirements must be met when sewage sludge, other than domestic septage, is placed on an active sewage sludge unit (40 CFR 503.27(a)).	following information for 5 yr: –the concentration of arsenic, chromium, and nickel in the sludge –a statement certifying that pathogen and vector attraction reduction requirements are being met –a description of how the pathogen requirements are being met when done –a description of how the vector attraction reduction requirements are being met when done. Verify that the operator of the surface disposal site retains the following for 5 yr: –the concentrations of the pollutants listed in Appendix 10-7 –a statement certifying that management practices and vector attraction reduction requirement are being met –a description of how the management practices are being met –a description of how the vector attraction reduction requirements are being met when they are done.
WW.140.5. Specific recordkeeping requirements must be met when domestic septage is placed on an active sewage sludge unit (40 CFR 503.27(b)).	Verify that the person who applies domestic septage with a pH of greater than 12 retains the following information for 5 yr: –a statement certifying that vector attraction reduction requirements are being met –a description of how the vector attraction reduction requirements are being met when done. Verify that the operator of the surface disposal site retains the following for 5 yr: –a statement certifying that management practices and vector attraction reduction requirement are being met –a description of how the management practices are being met –a description of how the vector attraction reduction requirements are being met when they are done.
WW.140.6. Class I sludge management facilities,	Verify that the following information is submitted to the permitting

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POTW/ FOTWs with a design flow rate equal to or greater than 1 million gal/day [3,785,412 L/ day], and POTW/ FOTWs that serve 10,000 people or more are required to submit specific information to the permitting authority on 19 February of each year (40 CFR 503.28).	authority on 19 February of each year: – the concentration of arsenic, chromium and nickel in the sludge – a statement certifying that management practices and pathogen and vector attraction reduction requirements are being met – a description of how the pathogen requirements are being met when done – a description of how the vector attraction reduction requirements are being met when done – the concentrations of the pollutants listed in Appendix 10-7 – a description of how the management practices are being met.

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WW.150 **SLUDGE INCINERATION**	
WW.150.1. Facilities with incinerators that fire sewage sludge must meet specific emissions standards (40 CFR 503.43(a) and 503.43(b)).	Verify that incinerators that fire sewage sludge meet the requirements on beryllium and mercury emissions outlined in 40 CFR 61.30 through 61.34 and 61.50 through 61.56.
WW.150.2. Sewage sludge being fed to an incinerator is required to meet specific concentration limitations for lead, arsenic, cadmium, and nickel (40 CFR 503.43 (c) and 503.43(d)).	Verify that the daily concentration of lead in sewage sludge fed to a sewage sludge incinerator does not exceed the concentration calculated using Formula 1 in Appendix 10-8. Verify that the daily concentration of arsenic, cadmium, chromium, and nickel do not exceed the concentrations calculated using Formula 2 in Appendix 10-8.
WW.150.3. The concentration of total hydrocarbons in the exit gas from a sewage sludge incinerator must meet specific limits (40 CFR 503.44).	Verify that the monthly average concentration for total hydrocarbons in the exit gas, corrected to zero percent moisture using the correction factor from Formula 1 of Appendix 10-9 and to 7 percent oxygen using the correction factor from Formula 2 does not exceed 100 ppm on a volumetric basis.
WW.150.4. Sewage	Determine what the permitting authority has specified in terms of

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sludge incinerators are required to have continuous monitoring devices for hydrocarbons and oxygen in the exit gas, and a continuous monitoring for combustion temperature, as specified by the permitting authority (40 CFR 503.45(a) through 503.45(f)).	continuous monitors for combustion temperature, and hydrocarbons and oxygen in the exit gas. Verify that the required monitors are in place and operational. (NOTE: The requirement for continuous monitors for hydrocarbons is effective 19 February 1994 unless construction of new pollution control facilities is required, in which case the compliance date is 19 February 1995.) (NOTE: The requirements for monitors for total hydrocarbons does not apply if the following conditions are met: – the exit gas from a sewage sludge incinerator stack is monitored continuously for CO – the monthly average concentration of CO in the exit gas from a sewage sludge incinerator stack, corrected for zero percent moisture and to 7 percent oxygen, does not exceed 100 ppm on a volumetric basis – the person who fires the sewage sludge incinerator retains the following information for 5 yr: – the CO concentrations in the exit gas – a calibration and maintenance log for the instrument used to measure the CO concentration – Class I sludge management facilities, POTWs with a design flow rate equal to or greater than 1 million gal/day, and POTWs that serve a population of 10,000 people or greater submit the monthly average CO concentrations in the exit gas to the permitting authority on 19 February of each year.)
WW.150.5. Sewage sludge must not be fired in a sewage sludge incinerator if it is likely to affect a threatened or endangered species (40 CFR 503.45(g)).	Determine if the facility has any endangered or threatened species which might be affected by the firing of the incinerator.
WW.150.6. Monitoring for arsenic, chromium, lead, and nickel shall be done at the frequency outlined in Appendix 10-6 (40 CFR 503.46).	Verify that monitoring is done at the frequency outlined in Appendix 10-6. (NOTE: After 2 yr of monitoring the permitting authority might reduce the required frequency.) (NOTE: Beryllium, mercury, and air pollution control device operating parameters will be monitored at the frequency designated by the

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	permitting authority.) (NOTE: The requirements for monitors for total hydrocarbons does not apply if the following conditions are met: – the exit gas from a sewage sludge incinerator stack is monitored continuously for CO – the monthly average concentration of CO in the exit gas from a sewage sludge incinerator stack, corrected for zero percent moisture and to 7 percent oxygen, does not exceed 100 ppm on a volumetric basis – the person who fires the sewage sludge incinerator retains the following information for 5 yr: – the CO concentrations in the exit gas – a calibration and maintenance log for the instrument used to measure the CO concentration – Class I sludge management facilities, POTWs with a design flow rate equal to or greater than one million gal per day, and POTWs that serve a population of 10,000 people or greater submit the monthly average CO concentrations in the exit gas to the permitting authority on 19 February of each year.)
WW.150.7. Individuals who fire sewage sludge in an incinerator are required to keep specific information on file for 5 yr (40 CFR 503.47).	Verify that the following information is kept on file for 5 yr: – the concentration of lead, arsenic, cadmium, chromium, and nickel in the sewage sludge fed to the incinerator – the total hydrocarbons concentration in the exit gas from the sewage sludge incinerator stack – information that indicates the National Emissions Standards for beryllium and mercury are met – the combustion temperatures, including the maximum combustion temperature for the incinerator – values for the air pollution control device operating parameters – the oxygen concentrations and information used to measure moisture content in the exit gas from the sewage sludge incinerator stack – the sewage sludge feed rate – the stack height for the incinerator – the dispersion factor for the site where the incinerator is located – the control efficiency for lead, arsenic, cadmium, chromium, and nickel for each incinerator – the risk specific concentrations for chromium – a calibration and maintenance log for the instruments used to measure the total hydrocarbons and oxygen content in the exit gas and the combustion temperature.

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	(NOTE: The requirements for recordkeeping for total hydrocarbons does not apply if the following conditions are met: – the exit gas from a sewage sludge incinerator stack is monitored continuously for CO – the monthly average concentration of CO in the exit gas from a sewage sludge incinerator stack, corrected for zero percent moisture and to 7 percent oxygen, does not exceed 100 ppm on a volumetric basis – the person who fires the sewage sludge incinerator retains the following information for 5 yr: – the CO concentrations in the exit gas – a calibration and maintenance log for the instrument used to measure the CO concentration – Class I sludge management facilities, POTWs with a design flow rate equal to or greater than one million gal per day, and POTWs that serve a population of 10,000 people or greater submit the monthly average CO concentrations in the exit gas to the permitting authority on 19 February of each year.)
WW.150.8. Class I sludge management facilities, POTWs with a design flow rate equal to or greater than 1 million gal/day [3,785,412 L/day], and POTWs that serve 10,000 people or more are required to submit specific information to the permitting authority (40 CFR 503.46).	Verify that the following information pertaining to incinerators is submitted to the permitting authority by 19 February of each year: – the concentration of lead, arsenic, cadmium, chromium, and nickel in the sewage sludge fed to the incinerator – the total hydrocarbons concentration in the exit gas from the sewage sludge incinerator stack – information that indicates the National Emissions Standards for beryllium and mercury are met – the combustion temperatures, including the maximum combustion temperature for the incinerator – values for the air pollution control device operating parameters – the oxygen concentrations and information used to measure moisture content in the exit gas from the sewage sludge incinerator stack – the sewage sludge feed rate – the stack height for the incinerator – the dispersion factor for the site where the incinerator is located – the control efficiency for lead, arsenic, cadmium, chromium, and nickel for each incinerator – the risk specific concentrations for chromium – a calibration and maintenance log for the instruments used to measure the total hydrocarbons and oxygen content in the exit gas and the combustion temperature.

Appendix 10-1

Relevant Dates for the Sewage Sludge Program (40 CFR 503)

Publication of 40 CFR 503 in 58 FR 9248.	19 February 1993
Publication of amendments to Sewage Sludge Permit Program regulations in 58 FR 9404.	19 February 1993
Effective date of 40 CFR 503.	22 March 1993
Requirements for monitoring and recordkeeping under 40 CFR 503 become effective (except for THC).	20 July 1993
Permit applications due from facilities required to have (or requesting) site-specific limits.	18 August 1993
Compliance date for 40 CFR 503 requirements other than monitoring, recordkeeping and reporting (where construction is not required).	19 February 1993
Requirements for monitoring, recordkeeping and reporting for THC under 40 CFR 503 become effective (where construction is not required).	19 February 1993
Requirements for reporting under 40 CFR 503 become effective.	19 February 1993
Limited permit application information due from sludge-only facilities (not needing site-specific limits.	19 February 1993
Due for closure of active sewage sludge units: 1. located within 60 m of a fault that has displacement in Holocene time (unless authorized by the permitting authority) 2. located in a wetland (unless authorized under an NPDES permit 3. located in an unstable area.	22 March 1993
Compliance date for 40 CFR 503 requirements other than monitoring, recordkeeping, and reporting (where construction is required).	19 February 1993
Requirements for monitoring, recordkeeping, and reporting for THC under 40 CFR 503 become effective (where construction is required).	19 February 1993
Date when active sewage sludge unit owners/operators must submit closure plans.	180 days prior to the date the unit closes.
Permit application information due from facilities with NPDES permits (not needing site-specific limits).	At the time of the next NPDES permit renewal.
Permit application information due from facilities who commence operations after 19 February 1993.	180 days prior to the date proposed for commencing operation.

Appendix 10-2

Cumulative Pollutant Loading Rates for Sludge (40 CFR 503.13(b)(2))

Pollutant	Cumulative Pollutant Loading Rate (kg/hectare)
Arsenic	41
Cadmium	39
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2800

Appendix 10-3

Ceiling Concentrations for Sludge (40 CFR 503.13(b)(1))

Pollutant	Ceiling Concentration (mg/kg, dry weight basis)
Arsenic	75
Cadmium	85
Copper	4300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7500

Appendix 10-4

Pollutant Concentrations for Sludge (40 CFR 503.13(b)(3))

Pollutant	Monthly Average Concentrations (mg/kg, dry weight basis)
Arsenic	41
Cadmium	39
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	36
Zinc	2800

Appendix 10-5

Annual Pollutant Loading Rates (40 CFR 503.13(b)(4))

Pollutant	Annual Pollutant Loading Rates (kg/hectare/ 365-day period)
Arsenic	2.0
Cadmium	1.9
Copper	75
Lead	15
Mercury	0.85
Nickel	21
Selenium	5.0
Zinc	140

Appendix 10-6

Frequency of Monitoring - Land Application, Surface Disposal, and Incineration (40 CFR 503.16, Table 1, 503.26, Table 1, 503.46, Table 1)

Amount of Sewage sludge* (metric tons/365-day period) [long ton/365 days]	Frequency
Greater than zero but less than 290 [285.42]	Once per year
Equal to or greater than 290 [285.42] but less than 1500 [1476.31]	Once per quarter (four times per year)
Equal to or greater than 1500 [1476.31] but less than 15,000 [14,763.1]	Once per 60 days (six times per year)
Equal to or greater than 15,000 [14,763.1]	Once per month

* Either the amount of bulk sewage sludge applied to the land or the amount of sewage sludge received by a person who prepares sewage sludge that is sold or given away in a bag or other container for application to the land (dry weight basis).

Appendix 10-7

Pollutant Concentrations for an Active Sewage Sludge Unit (40 CFR 503.23, Table)

Unit Boundary to Property Site	Pollutant Concentration [1]		
(Distance in meters)	Arsenic mg/kg	Chromium mg/kg	Nickel mg/kg
0 to less than 25	30	200	210
25 to less than 50	34	220	240
50 to less than 75	39	260	270
75 to less than 100	46	300	320
100 to less than 125	53	360	390
125 to less than 150	62	450	420

[1] Dry weight basis

Appendix 10-8

Lead Concentration in Sewage Sludge Fed to an Incinerator (40 CFR 503.43)

Formula 1

$$C = \frac{0.1*NAAQS*86{,}400}{DF*(1-CE)*SF}$$

Where:

C - Daily concentration of lead in sewage sludge in milligrams per kilogram of total solids (dry weight basis).
NAAQS - National Ambient Air Quality Standards for lead in micrometer per cubic meter.
DF - Dispersion factor in micrometer per cubic meter per gram per second.
CW - Sewage sludge incinerator control efficiency for lead in hundreths.
SF - Sewage sludge feed rate in metric tons per day (dry weight basis).

Formula 2

$$C = \frac{RSC*86{,}400}{DF*(1-CE)*SF}$$

Where:

C - Daily concentrations of arsenic, cadmium, chromium, or nickel in sewage sludge in milligrams per kilogram of total solids (dry weights basis).
CE - Sewage sludge incinerator control efficiency for arsenic, cadmium, chromium, or nickel in hundreth.
DF - Dispersion factor in micrometer per cubic meter per gram per second.
RSC - Risk specific concentration in micrometer/cubic meter -S.
F - Sewage sludge feed rate in metric tons per day (dry weight basis).

Appendix 10-9

Total Hydrocarbon Operational Standards
(40 CFR 503.44)

Formula 1

$$\text{Corrective Factor (percent moisture)} = \frac{1}{(1-X)}$$

Where:

X - decimal fraction of the percent moisture in the sewage sludge incinerator exit gas in hundreths

Formula 2

$$\text{Corrective Factor (oxygen)} = \frac{14}{(21-Y)}$$

Where:

Y - percent oxygen concentration in the sewage sludge incinerator stack exit gas (dry volume/dry volume)