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13. ABSTRACT (Maximum 200 words)

The U.S. Army maintains an environmental compliance program that identifies compliance problems before they are cited as violations by the U.S. Environmental Protection Agency (USEPA).

Beginning in 1985, Major Army Commands (MACOMs) were required to conduct comprehensive environmental assessments at all installations on a 4-year cycle. The installations must also conduct a mid-cycle internal assessment. Because each MACOM was developing a separate assessment system, the Army mandated, through Army Regulation 200-1, one unified Army-wide assessment mechanism. The resulting system combines Federal, Department of Defense (DOD), and Army environmental regulations, along with good management practices and risk-management information, into a series of checklists that show legal requirements and which specific items or operations to review. Each assessment protocol lists a point of contact to help assessors review the checklist items as effectively as possible.

The Worldwide Environmental Compliance Assessment System (ECAS) manual incorporates existing checklists from USEPA and private industry. It also integrates information from the Overseas Environmental Baseline Guidance Document (OEBGD), published by DOD in October 1992. Additionally, Worldwide ECAS includes pertinent information from Army Regulations, DOD Directives and Instructions, and it cites good management practices for an overall environmental review.

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Worldwide ECAS
environmental compliance checklists

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MEMORANDUM FOR Commander

SUBJECT: Environmental Compliance Manual, "Worldwide Environmental Compliance Assessment System (ECAS)"

Request approval to publish subject environmental compliance manual. Sponsor comments have been incorporated. Distribution has been reviewed and is the minimum appropriate for T^2.

Encl

D. P. MANN
Chief, Information
Management Office

Public Works Digest

FOREWORD

This work was performed for U.S. Army Environmental Center (USAEC), under military interdepartmental purchase request number 1641, dated 17 September 1991. The USAEC technical monitor was Dave Guldenzopf, SFIM-AEC-ECC.

The research was performed by the Environmental Compliance Modeling and Systems Division (EC) of the Environmental Sustainment Laboratory (EL), U.S. Army Construction Engineering Research Laboratories (USACERL). The Principal Investigator was Donna J. Schell, Environmental Compliance Protocol Team, CECER-ECP. Tina M. Beckler, CECER-ECP, was Associate Investigator. Dr. Diane K. Mann, CECER-ECP, is Acting Team Leader. Dr. William D. Goran is Acting Chief, CECER-EC, and Dr. Edward W. Novak is Acting Chief, CECER-EL.

LTC David J. Rehbein is Commander of USACERL and Dr. L. R. Shaffer is Director.

NOTICE

This manual is intended as general guidance for personnel at certain U.S. Army installations. It is not, nor is it intended to be, a complete treatise on environmental laws and regulations. Neither the U.S. 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 legal counsel.

Table of Contents

INTRODUCTORY SECTION

PROTOCOL SECTION

PROGRAM BACKGROUND

The goal of the ECAS is to help all Army Installations Continental United States (CONUS) and outside Continental United States (OCONUS) to attain and sustain compliance with applicable environmental laws and regulations.

The objectives of the ECAS are to:

1. assist Installation Commanders in identifying environmental compliance deficiencies
2. identify corrective actions to address
3. identify the resources necessary to implement the corrective actions
4. track the execution of corrective action.

The compliance assessments are designed to identify the resources required to correct the non-compliant areas and provide necessary feedback to commanders for organizing, directing, and controlling environmental protection activities.

GOVERNING POLICY

The Department of Defense has developed a series of baseline guidance standards for environmental compliance overseas (see the *Overseas Environmental Baseline Guidance Document, October 1992*). Additional policy concerning environmental compliance at overseas military communities is contained in the following:

1. Executive Order (EO) 12088
2. EO 12114
3. DOD 5100.50
4. DOD Directive 6050.7
5. AR 200-1, para 1-40.

- EO 12088, *Federal Compliance with Pollution Control Standards*, requires the following:

  1-801. The head of each executive agency that is responsible for the construction or operation of Federal facilities outside the United States shall ensure that such construction or operation complies with the environmental pollution control standards of general applicability in the host country or jurisdiction.

1-802. Nothing in this order shall create any right or benefit, substantive or procedural, enforceable at law by a party against the United States, its agencies, its officers, or any person.

- EO 12114, *Environmental Effect Abroad of Major Federal Actions*, requires every Federal agency with major Federal actions significantly affecting the environment of a foreign nation to use the following documents in connection with actions:

    1. environmental impact statements
    2. environmental study
    3. environmental review.

- *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992 identifies implementation guidance, procedures and criteria for environmental compliance at DOD installations outside the United States, its territories, and possessions.

- DOD Directive 5100.50, *Protection and Enhancement of Environmental Quality*, requires DOD components at locations outside the United States to conform at all times to the environmental quality standards of the host country, international agreements, and SOFA and to conform, to the extent practical, to the following:

    1. comply with the spirit, as well as the letter, of the National Environmental Policy Act and all other Federal environmental laws, executive orders, and regulations
    2. demonstrate leadership in environmental pollution abatement and enhancement of the environment.

- DOD Directive 6050.7, *Environmental Effects Abroad of Major Department of Defense Actions*, implements the requirements of EO 12114 by providing policy and procedures to enable DOD officials to be informed and take account of environmental considerations when authorizing or approving certain major Federal actions that do significant harm to the environment of places outside the United States.

- AR 200-1, *Environmental Protection and Enhancement*, para 1-40, states that at "OCONUS locations, commanders of Army activities will maintain cooperative relationships with the regulatory agencies in host countries or jurisdictions and comply with the substantive pollution control standards of general applicability." The SOFA should also be taken into consideration.

MANUAL OBJECTIVES

The ECAS manual for OCONUS military communities is intended to serve as the primary tool for conducting environmental compliance evaluations at Army installations and facilities outside of the United States. The objectives of the manual are to:

1. compile applicable DOD and Army environmental regulations associated with Army operations and activities
2. synthesize requirements into consistent and easy to use checklists
3. serve as an aid during the evaluation process.

A second, country specific manual (if available), should be used in conjunction with the OCONUS ECAS manual. A country specific manual contains the substantive environmental pollution control standards for the host country. These are the standards interpreted to have general applicability for the military community.

ENVIRONMENTAL EVALUATION PROCESS

The ECAS program management process described above can be divided into three distinct phases:

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

The ECAS manual deals with the first two phases of the program management process. For detailed information on the post-evaluation phase of the process, refer to the ECAS policy. Brief descriptions of the pre-evaluation and site evaluation activities are presented below.

• Pre-evaluation Activities - Five key activities should be completed before an evaluation team begins the evaluation activities.

1. Complete Previsit Questionnaire (External evaluations only). The purpose of the pre-visit questionnaire is to collect information that will familiarize the evaluation team with the military community and its operations so the evaluation team can review the applicable regulations and prepare a detailed evaluation schedule. (A sample pre-visit questionnaire has been included as Attachment 1.)
2. Define Evaluation Scope and Team Responsibilities. The military community or major command may wish to place special emphasis on certain protocols or to review additional areas not covered in the manual. These goals must be clearly stated so the evaluation can be properly planned. Additionally, the dura-

tion of the evaluation, appointment of team members, and handling of tenants and remote sites must be addressed. Finally, responsibilities for each protocol must be assigned to one of the team members.

3. Review Relevant Regulations. Once the evaluation scope and responsibilities are known, the evaluators should undertake a thorough review of the relevant host nation, local, and MACOM regulations and policies affecting the military community. The applicable environmental regulations must be determined before the evaluation is begun. If not already available, checklist items for host nation and local requirements must be added to the checklists in the ECAS manual. If the MACOM has implemented U.S. Federal standards, the evaluator needs to use the appropriate section of the most recent United States ECAS manual in the assessment.
4. Develop Evaluation Schedule. The team should develop a detailed evaluation schedule that includes the activities planned for each day.
5. Review Evaluation Protocols. Each evaluator should know the regulatory requirements and schedule and be familiar with the evaluation checklists that will be used.

- Site Evaluation Activities - Information will be collected regarding environmental compliance and other matters. This information will be obtained through record searches, interviews, and site surveys. The data collected should be sufficient, reliable, and relevant to provide a sound basis for evaluation findings and recommendations. The format and content of ECAS evaluation reports is covered in the ECAS policy. To assist evaluators in gathering the needed information during the evaluation, a finding sheet form has been included on page xxix. A finding sheet should be completed for each finding during the evaluation.

MANUAL APPROACH

Military communities engage in many operations and activities, that can cause environmental impacts on public health and the environment if not controlled or properly managed. Many of these activities and operations are regulated by local, national, DOD, and U.S. Army directives/regulations.

After a review of these activities at military communities, it was apparent that there were major categories of environmental compliance into which most environmental regulations and military community activities could be grouped.

This manual is divided into 11 major sections that correspond to these major environmental categories:

Section	Environmental Category
1	Air Emissions Management
2	Hazardous Materials Management
3	Hazardous Waste Management
4	Natural and Cultural Resources Management
5	Environmental Noise Management
6	Pesticide Management
7	Petroleum, Oil, and Lubricant Management
8	Solid Waste Management
9	Special Programs Management
10	Water Quality Management
11	Management

Each Section is organized in the same format:

A. Applicability

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

B. DOD Regulations

This section identifies any DOD directives/instructions that address requirements associated with the specific compliance category.

C. Army Regulations

This section identifies any Army regulations that address requirements associated with the specific compliance category.

D. Responsibility for Compliance

This section identifies and summarizes the individual organizations at a military community responsible for maintenance, operation, or environmental monitoring of activities associated with the environmental category.

E. Key Compliance Definitions

This section of each protocol presents definitions for those key terms associated with each environmental category.

F. Assessment Checklist

The final section of each protocol contains evaluation procedures (worksheets) composed of statements of requirements or guidelines that serve as indicators to point out possible environmental problems, as well as practices, conditions, and situations that could indicate potential problems. They are intended to focus attention on the key questions and issues that should be investigated. Instructions are provided to direct the evaluator to the appropriate action, reference, or activity that corresponds to the specific requirement or guideline.

MANUAL INTRODUCTION

The protocol portion of the ECAS manual is divided into two columns. The first of these is a statement of a requirement. This may be an AR or DOD requirement, or it may be a requirement is considered to be a good management practice, which is not specifically mandated by regulation.

The next column gives instructions to help conduct the evaluation. 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, while others may require physical inspection of a military community. Contact/location information in parentheses is intended to give guidance on the department or location at the military community where action items are applicable. The contact/location code given is referenced to a legend at the bottom of the worksheet.

The evaluation procedures are designed as an aid and should not be considered exhaustive. Use of the guide requires the evaluator's judgement to play a role in determining the focus and extent of further investigation. The MACOM is responsible for ensuring that host nation regulations are considered. The country specific manual (if available) and local regulations should be reviewed so that additional questions can be included that reflect the substantive requirements pertinent to individual military communities.

SUPPLEMENTAL INFORMATION

Any findings discovered through the use of this guidance manual by the internal assessment must be validated by the environmental coordinator and Judge Advocate.

Any change or suggestion for improving this guidance manual should be forwarded to USACERL, P.O. BOX 9005, Champaign, IL 61826-9005, ATTN: Ms. Tina Beckler/Ms. Donna Schell, or 1-800-USACERL, ext. 395.

Attachment 1
Previsit Environmental Management Questionnaire

This questionnaire will provide background information necessary to plan and conduct an environmental compliance assessment.

MACOM:_____
Name of Installation:_____
Environmental Point of Contact (POC):_____
Telephone Number:_____

Has the MACOM implemented a policy of adopting any U.S. Federal environmental regulations? If yes, which ones:

_____

_____

_____

_____

Attachment 1
Previsit Environmental Management Questionnaire

This questionnaire will provide background information necessary to plan and conduct an environmental compliance assessment.

Name of Installation:_____

	YES	NO	N/A
Section 1. Air Emissions Management			
1. Does installation operate a fuel burner?	—	—	—
a. central steam plant?	—	—	—
b. hot water?	—	—	—
c. approximate size of fuel burner _____			
2. Are any hazardous or toxic air pollutants present in the installation's air emissions (e.g., beryllium, asbestos, mercury, and vinyl chloride)?	—	—	—
3. Is the installation subject to any of the following air emission standards:			
a. particulates?	—	—	—
b. NO_x?	—	—	—
c. sulfur dioxide?	—	—	—
d. volatile organic compounds?	—	—	—
e. carbon monoxide?	—	—	—
f. toxic air pollutants?	—	—	—
If yes, please specify:			

_____

	YES	NO	N/A
4. Does the installation operate any incinerators (i.e., for classified documents, medical waste, solid waste, etc.)?	—	—	—
How many? ____			
5. Does the installation engage in:			
a. open burning?	—	—	—
b. firefighter training?	—	—	—
6. Does the installation use any solvent degreasers?	—	—	—
7. Does the installation have a dry cleaning facility?	—	—	—
8. Does the installation have a:			
a. spray painting operation?	—	—	—
b. surface coating operation?	—	—	—
(Attach list of locations if answered yes to either.)			
9. Have installation emissions resulted in complaints from the public due to:			
a. odors?	—	—	—
b. fugitive dusts?	—	—	—
c. other? _____	—	—	—
10. Does the installation utilize air pollution control equipment?	—	—	—
If yes, please explain:			
_____			
_____			
11. Does installation operate a motor vehicle station?	—	—	—
12. Does the installation dispense fuel to motor vehicles?	—	—	—

13. Please list number of fuel storage areas and the fuel type.

Quantity	Fuel Type	Quantity	Fuel type
_____	_____	_____	_____
_____	_____	_____	_____

	YES	NO	N/A
14. Does the installation have active aircraft operations?	—	—	—
15. Does the installation have active aircraft maintenance operations?	—	—	—
16. Does the installation have aerospace ground equipment (AGE) operations?	—	—	—

17. Please list any additional shop activities that generate any form of air pollution:

_____

_____

_____

Section 2 Hazardous Materials Management

1. Does the installation store any flammable materials?	—	—	—
2. Does the installation transport any hazardous materials off-installation?	—	—	—
3. Does the installation have a procedure to ensure the proper labeling, packaging, and spill response for hazardous materials?	—	—	—
4. Does the installation store:			
a. acids?	—	—	—
b. caustics?	—	—	—
c. flammables?	—	—	—
d. combustibles?	—	—	—
e. compressed gases?	—	—	—
f. oxidizers?	—	—	—

Section 3 Hazardous Waste Management

	YES	NO	N/A
1. Does the installation produce any wastes classified as:			
a. ignitable?	—	—	—
b. corrosive?	—	—	—
c. reactive?	—	—	—
d. toxic?	—	—	—
e. other (please explain)?	—	—	—
2. Does the installation treat, store or dispose of hazardous wastes on site?	—	—	—
If so, please specify waste type and treatment method:			
3. Does the installation accept wastes from other installations for treatment, storage, or disposal?	—	—	—
4. Does the installation engage in the transportation of hazardous wastes:			
a. on site?	—	—	—
b. off site?	—	—	—
c. by central transport (transportation squadron)?	—	—	—
d. by individual unit transport?	—	—	—
5. Does the installation monitor:			
a. groundwater?	—	—	—
b. leachate?	—	—	—

	YES	NO	N/A
6. Does the installation have a hazardous waste management (contingency) plan?	—	—	—
7. Does the installation utilize other locations for the treatment, storage, or disposal of hazardous waste?	—	—	—
Please specify:			
_____			
_____			
8. Does the installation use any nonhazardous solid waste (including used oil) as a supplemental fuel source?	—	—	—
9. Does the installation have a contractor dispose of its hazardous waste?	—	—	—
Which office monitors this contract?			
_____			

Section 4 Natural and Cultural Resources Management

1. Does the installation have an area designated as a natural resource, including "highly protected" and "more generally protected?"	—	—	—
2. Does the installation have a plan for managing its natural and cultural resources?	—	—	—
3. Does the installation have an area designated as a:			
a. cultural resource?	—	—	—
b. archeological resource?	—	—	—
c. historic structure?	—	—	—
4. Are there any areas on the installation that have:			
a. wetlands?	—	—	—
b. flood plains?	—	—	—

	YES	NO	N/A
Section 5 Environmental Noise Management			
1. Does the installation have an active runway?	—	—	—
2. Does the installation have any operations or maneuvers that produce environmental noise (e.g. target range, skeet range, helicopter pad)?	—	—	—
Section 6 Pesticide Management			
1. Does the installation use pesticides in regulated quantities?	—	—	—
2. Are pesticide wastes disposed of at the installation?	—	—	—
3. Are pesticides stored on the installation? Please list locations:	—	—	—

_____

_____

_____

4. Are medical records kept for individuals involved in the management of pesticides?	—	—	—

5. Where are pesticides used at the installation?

_____

_____

_____

	YES	NO	N/A

Section 7 POL Management

Fuels and Lubricants

1. Does the installation have a motor pool? — — —

   How many?_____

2. Does the installation store oil in large volumes? — — —

3. Does the installation have a spill prevention and response plan? — — —

4. Does the installation's spill plan include provisions pertaining to hazardous substances or hazardous wastes? — — —

5. Does the installation conduct spill response training? — — —

6. Does the installation use "fuel bladders" during field exercises? — — —

7. Does the installation have any oil/water separators? — — —

   a. How many? _____
(Please have a map, showing location, available for the team.)

Underground Storage Tanks (USTs)

8. Does the installation have an aircraft fuel storage yard? — — —

   If yes, how many USTs are in the aircraft fuel storage yard, and what size are they?

_____

_____

9. Does the installation have a ground vehicle fuel storage yard? — — —

   If yes, how many USTs are in the ground vehicle fuel storage yard, and what size are they?

_____

	YES	NO	N/A
10. Does the installation have an Army and Air Force Exchange Service (AAFES)-run or other type of gas station located on the site?	—	—	—
If yes, how many USTs are located at the gas station, and what size are they?			
11. Does the installation have any other USTs used to store petroleum products?	—	—	—
If yes, where are they located, how many are there, and what size are they?			
12. Does the installation have any USTs used to store hazardous substances?	—	—	—
If yes, where are they located, how many are there, what size are they, and what hazardous product do they contain?			
13. Does the installation have any underground tanks out of service?	—	—	—

Section 8 Solid Waste Management

1. Does the installation have a solid waste management facility on site?	—	—	—
2. Does the installation have a:			
a. resource recovery facility Defense Reutilization and Marketing Office (DRMO) on the installation?	—	—	—
b. resource recovery facility (DRMO) off the installation?	—	—	—
c. landfill?	—	—	—
d. solid waste incinerator?	—	—	—
e. solid waste recycling program?	—	—	—

	YES	NO	N/A
3. Does the installation have any "unofficial" landfill sites that are no longer in use?	—	—	—
4. Is waste transported off-installation for disposal:			
a. in landfills?	—	—	—
b. in incinerators?	—	—	—
c. other (specify):_____	—	—	—
5. Does the installation dispose of ash residues or sludge:			
a. on site?	—	—	—
b. off site?	—	—	—
6. Is the installation monitored for:			
a. leachate?	—	—	—
b. groundwater?	—	—	—
7. Does the installation currently dispose of, or has it been used for the disposal of, asbestos?	—	—	—
8. Does the installation generate pathological wastes?	—	—	—
9. Does the installation dispose of pathological waste by on-site incineration?	—	—	—

	YES	NO	N/A

Section 9 Special Programs Management

PCBs

1. Are PCB (polychlorinated biphenyl) or PCB contaminated oils in use or stored in the installation:

a. transformers?	—	—	—
b. capacitors?	—	—	—
c. electromagnets?	—	—	—
d. hydraulic systems?	—	—	—
e. other? _____	—	—	—

2. Are there any PCB Items in storage for disposal? — — —

PCB concentration (if known): _____

3. Does installation dispose of PCBs or PCB Items at the site? — — —

Asbestos

4. Does the installation have primary or secondary schools? — — —

5. Has the installation conducted a complete site-wide asbestos facility survey? — — —

6. Does the installation have a written asbestos management plan? — — —

7. Does the installation have a written asbestos operating plan? — — —

8. Has the installation undergone any asbestos removal projects in the past? — — —

	YES	NO	N/A
9. Is there any asbestos on the installation that has been removed and is awaiting disposal at this time?	—	—	—
10. Will the installation have any demolition, remodeling, or renovation projects underway at the time of the ECAS assessment?	—	—	—

Please identify those projects and buildings:

_____

_____

11. Does the installation maintain training records for asbestos workers?	—	—	—

Location of records:

_____

_____

Radon Gas

12. Is the installation located in a geographic area where radon gas is found?	—	—	—
13. Does the installation monitor for radon gas?	—	—	—

A-106

14. Does the installation include in the A-106 report, all environmental projects listed in the CECORs?	—	—	—

EIAP

15. Does the installation have any major actions programmed that will require an Environmental Impact Analysis Program (EIAP) as described in AFR 19-3?	—	—	—

Section 10 Water Quality Management

	YES	NO	N/A
Drinking Water			
1. Does the installation operate a public water system?	—	—	—
2. Does any portion of the installation's drinking water supply come from on-site wells or surface water sources?	—	—	—
3. Does the installation monitor on-site drinking water sources?	—	—	—
Wastewater Discharge			
4. Does the installation have any discharges of the following:			
a. stormwater runoff from operational/storage area?	—	—	—
b. stormwater runoff from undeveloped area?	—	—	—
c. dredge and fill solids drainage water?	—	—	—
d. wastewater treatment installation effluent?	—	—	—
e. process wastewater?	—	—	—
f. heat/power production cooling water?	—	—	—
g. other?_____	—	—	—
5. Does the installation discharge into a Publicly Owned Treatment Works (POTW) any of the following:			
a. process wastewater?	—	—	—
b. domestic (sanitary) wastewater?	—	—	—
c. wastewater treatment installation effluent?	—	—	—
d. other?_____	—	—	—

	YES	NO	N/A
6. Does the installation make use of an on-site wastewater treatment system prior to effluent discharge?	—	—	—
7. Does the installation conduct any effluent monitoring?	—	—	—
8. Are monitoring samples analyzed by:			
a. installation personnel?	—	—	—
b. off-site contractor?	—	—	—
9. Does the installation have a separate stormwater runoff system?	—	—	—
10. Does the installation have vehicle washracks (or other designated vehicle wash areas)?	—	—	—
General			
11. Does the installation contain water protection areas?	—	—	—
12. Is the installation suspected of contributing to a groundwater contamination problem?	—	—	—

Section 11 Management

1. Has the installation recently prepared, or is it in the process of preparing, an environmental study or an environmental review for:	—	—	—
a. current mission?	—	—	—
b. future master plan?	—	—	—
2. Is the Environmental Officer actively involved in project/work order reviews?	—	—	—
3. Is the installation engaged in any construction, renovation, or demolition?	—	—	—
4. Is the installation engaged in any real property transaction?	—	—	—

	YES	NO	N/A
5. Is there currently an under-staffing problem?	—	—	—
Total authorized: _____			
Total recognized: _____			
Total vacancies: _____			
Required number of positions needed over and above the Tables of Distribution and Allowances (TDA) authorization:_____			
6. What is the total number of programs currently required to manage the entire environmental program (i.e., Air, Hazardous Waste/Material, Groundwater, Surface Water, Solid Waste, Noise, Training, POL, Archeology, Asbestos, etc.)?_____			
7. Is the Environmental Program Manager an active participant in the budgetary processes of the installation?	—	—	—
8. Does the Environmental Management Office receive adequate support or cooperation from:			
a. Preventive Medicine Activity?	—	—	—
b. Safety Office?	—	—	—
c. Inspector General?	—	—	—
d. Manpower Survey Activity of Resource Management Directorate?	—	—	—
e. Civilian Personnel Office (i.e., Recruitment/Placement and Position Management/Classification)?	—	—	—
f. Staff Judge Advocate?	—	—	—
g. Directorate of Plans, Training, Mobilization, and Security (Range Control, Aviation, Maintenance)?	—	—	—
h. Directorate of Logistics (maintenance, supply, and services)?	—	—	—
i. Directorate of Contracting or Procurement?	—	—	—
j. Directorate of Engineering and Housing (i.e., DEH, DDEH, Operations and Maintenance (O&M) Divisions, Engineering Plans and Services, etc.)?	—	—	—

	YES	NO	N/A
k. Mobilization and Training Equipment Site (MATES), Union Training Equipment Site (UTES), ECS, AMSAs, etc.?	—	—	—
l. major garrison military units?	—	—	—
m. transient troop units (i.e., U.S. Army Reserve (USAR), Army National Guard (ARNG), and active Army components special training exercises)	—	—	—
n. Director of Personnel and Community Activities (DPCA) (auto craft, arts and crafts, photo labs, outdoor recreation)	—	—	—
o. other tenant activities (i.e., AAFES, DRMO, U.S. Air Force (USAF))	—	—	—
9. Is required support being provided to environmental training? List separately:			
a. environmental staff (is professional development staying current)?	—	—	—
b. civilian staff personnel (to include within DEH)?	—	—	—
c. military units/military personnel/unit commanders?	—	—	—

Signature of individual completing this form:_____

Date completed:_____

ECAS Manual Used:
Regular Army ___
Army Reserve ___
Army National Guard ___
Date of ECAS Manual: ___

Manual Edition Date: _____
State Manual Title & Date: _____
Local Manual Title & Date: _____

ECAS INDIVIDUAL FINDING SHEET

-For Official Use Only-

Facility/Activity Name: _____ Facility/Activity Type (See reverse): _____

Tenant or Host (T/H)? _____
If Tenant, give:
1) Name: _____
2) FFID: _____
Location/Facility Number: _____
If Reserve, give:
1) BASOPS: _____
2) ARCOM: _____
3) MUSARC: _____

Manual Section # : _____
Question # : _____

Type of Finding (POS / NEG): _____
Finding Category: I II III H/S (See reverse)

O Check only if finding requires immediate action due to threat or risk.

CONDITION (Finding Description):

CRITERIA (What is the actual requirement?):

BASIS OF FINDING (Citation or Regulation):

Existing NOV? Y / N
Previous ECAS Finding? Y / N

Recurring NOV? Y / N
NOV Number(s) (if applicable): _____

SUGGESTED SOLUTION(s):

SAMPLING RESULTS:
Universe: ___
Number of Discrepancies: ___

Sample Size: ___
Percentage of Discrepancies: ___

PREPARED BY: **DATE:**

COMMENTS:

FACILITY/ACTIVITY TYPES

ACTIVE ARMY		RESERVES	GUARD
17	Troop Operations & Training Facilities (Buildings/Ranges)	1. ASF	Armory
21	Maintenance	2. AFRC	OMS
22	Production	3. AMSA (G)	CSMS
30	R&D Labs/Test Facilities	4. AMSA (W)	UTES
40	Supply & Storage/Logistics	5. DS/GS	MATES
50	Hospital/Medical	6. ECS	AASF
60	Admin/Communication	7. LTA	AVCRAD
70	Housing and Community	8. OMS	LTA
80	Utilities/Ground Improvements	9. RTS-INTEL	MTA
90	Real Estate/Site Improvements Research & Testing	10. RTS-MAINT	STARC/HQ
		11. RTS-MED	USP & FO
		12. STORAGE	
		13. USARC	
		14. OTHER	

FINDING CATEGORIES:

1) Environmental Findings I, II, & III

2) Health/Safety Findings

CLASS I FINDINGS: Noncompliance with an existing environmental regulation, compliance agreement, consent order, or operating/discharge permit. These may stem from Federal, state, or local requirements.

CLASS II FINDINGS: Noncompliance with a future deadline in an environmental regulation, compliance agreement, or consent order. These may stem from Federal, state, or local requirements.

CLASS III FINDINGS: Findings based on management practices that are not based on regulatory requirements. These include findings based on Army Regulations and DOD Directives. Class III findings may be positive or negative.

HEALTH/SAFETY FINDINGS: Findings related to OSHA, DOT, and NFPA as indicated in requirements column in the ECAS protocol. Most health/safety findings are in the Hazardous Materials Section (Section 17) if the protocol. Health/safety findings may be regulatory but are not part of the RCS 1383 reporting process and not eligible for any environmental funding. Health/safety findings are not classified I, II, or III.

ARMY NATIONAL GUARD FACILITY TYPES:

ARM	Armory
OMS	Organizational Maintenance Shop
CSMS	Combined Support Maintenance Shop
UTES	Unit Training Equipment Site
MATES	Mobilization and Training Equipment Site
AASF	Army Aviation Support Facility
LTA	Local Training Area
MTA	Major Training Area
STARC/HQ	State Area Command/Headquarters
AVCRAD	Aviation Classification Repair Activity Depot
USPFO	United States Property & Fiscal Office

ECAS Manual Used:
Regular Army ___
Army Reserve ___
Army National Guard ___
Date of ECAS Manual: ___

Manual Edition Date:_____
State Manual Title & Date:_____
Local Manual Title & Date:_____

ECAS INDIVIDUAL FINDING SHEET

-For Official Use Only-

Facility/Activity Name:_____ Facility/Activity Type (See reverse):_____

Tenant or Host (T/H)? _____
If Tenant, give:
1) Name: _____
2) FFID: _____
Location/Facility Number: _____
If Reserve, give:
1) BASOPS:_____
2) ARCOM:_____
3) MUSARC:_____

Manual Section # :_____
Question # : _____

Type of Finding (POS / NEG):_____
Finding Category: I II III H/S (See reverse)

○ Check only if finding requires immediate action due to threat or risk.

CONDITION (Finding Description):

CRITERIA (What is the actual requirement?):

BASIS OF FINDING (Citation or Regulation):

Existing NOV? Y / N
Previous ECAS Finding? Y / N

Recurring NOV? Y / N
NOV Number(s) (if applicable):_____

SUGGESTED SOLUTION(s):

SAMPLING RESULTS:
Universe:____
Number of Discrepancies:____

Sample Size:____
Percentage of Discrepancies:____

PREPARED BY: **DATE:**

COMMENTS:

FACILITY/ACTIVITY TYPES

ACTIVE ARMY	RESERVES	GUARD
17 Troop Operations & Training Facilities (Buildings/Ranges)	1. ASF	Armory
21 Maintenance	2. AFRC	OMS
22 Production	3. AMSA (G)	CSMS
30 R&D Labs/Test Facilities	4. AMSA (W)	UTES
40 Supply & Storage/Logistics	5. DS/GS	MATES
50 Hospital/Medical	6. ECS	AASF
60 Admin/Communication	7. LTA	AVCRAD
70 Housing and Community	8. OMS	LTA
80 Utilities/Ground Improvements	9. RTS-INTEL	MTA
90 Real Estate/Site Improvements Research & Testing	10. RTS-MAINT	STARC/HQ
	11. RTS-MED	USP & FO
	12. STORAGE	
	13. USARC	
	14. OTHER	

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ARM	Armory
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CSMS	Combined Support Maintenance Shop
UTES	Unit Training Equipment Site
MATES	Mobilization and Training Equipment Site
AASF	Army Aviation Support Facility
LTA	Local Training Area
MTA	Major Training Area
STARC/HQ	State Area Command/Headquarters
AVCRAD	Aviation Classification Repair Activity Depot
USPFO	United States Property & Fiscal Office

Table 2
Major Activities/Operations at Army Installations and Related Protocols

Major Activities/ Operations	PROTOCOLS			
	Air Emissions Management 1	Hazardous Materials Management 2	Hazardous Waste Management 3	Natural and Cultural Resources Management 4
1. Incinerators	•			
2. Heat/Power Production	•		•	
3. Medical Treatment Facility			•	
4. Aircraft Operations	•	•	•	
5. Aircraft Maintenance	•	•	•	
6. Fuel Storage	•	•		
7. Sludge Disposal	•		•	
8. Sanitary/Industrial Wastewater			•	
9. Storm Water Runoff				
10. POL Dispensing	•	•	•	
11. Wastewater Treatment				
12. Vehicle Maintenance	•	•	•	
13. Shop Activities	•	•	•	
14. Solid Waste Generation				
15. Water Supply				
16. Toxic/hazardous Materials Use	•	•	•	
17. PCB Electrical Equipment				
18. Pesticide/Herbicide Use		•	•	
19. Emergency Planning		•		
20. Asbestos Removal	•			
21. Underground Storage Tanks		•	•	
22. Renovation/Demolition Activities	•			
23. New Construction Activities				
24. Indoor Firing Range	•			
25. Marine Operations		•	•	
26. On-going IRP Program			•	•
27. Training Ranges/Impact Areas		•	•	•
28. De-icing/Salt Activities		•	•	
29. Open Burning/Detonation	•	•	•	•

Table 2 (continued)
Major Activities/Operations at Army Installations and Related Protocols

Major Activities/ Operations	PROTOCOLS			
	Environmental Noise Management 5	Pesticide Management 6	POL Management 7	Solid Waste Management 8
1. Incinerators				•
2. Heat/Power Production				
3. Medical Treatment Facility				•
4. Aircraft Operations	•		•	
5. Aircraft Maintenance			•	•
6. Fuel Storage			•	
7. Sludge Disposal			•	•
8. Sanitary/Industrial Wastewater				
9. Storm Water Runoff			•	
10. POL Dispensing			•	
11. Wastewater Treatment				•
12. Vehicle Maintenance			•	•
13. Shop Activities	•	•	•	•
14. Solid Waste Generation				•
15. Water Supply				
16. Toxic/hazardous Materials Use		•	•	
17. PCB Electrical Equipment				
18. Pesticide/Herbicide Use	•		•	
19. Emergency Planning		•		
20. Asbestos Removal				•
21. Underground Storage Tanks			•	
22. Renovation/Demolition Activities				•
23. New Construction Activities				•
24. Indoor Firing Range	•			
25. Marine Operations			•	
26. On-going IRP Program			•	•
27. Training Ranges/Impact Areas	•			•
28. De-icing/Salt Activities				
29. Open Burning/Detonation				•

Table 2 (continued)
Major Activities/Operations at Army Installations and Related Protocols

Major Activities/ Operations	PROTOCOLS		
	Special Programs Management 9	Water Quality Management 10	Management 11
1. Incinerators	•		
2. Heat/Power Production			
3. Medical Treatment Facility			
4. Aircraft Operations			•
5. Aircraft Maintenance	•	•	
6. Fuel Storage		•	
7. Sludge Disposal			
8. Sanitary/Industrial Wastewater		•	
9. Storm Water Runoff		•	
10. POL Dispensing		•	
11. Wastewater Treatment		•	
12. Vehicle Maintenance			
13. Shop Activities		•	
14. Solid Waste Generation	•		•
15. Water Supply		•	
16. Toxic/hazardous Materials Use	•		•
17. PCB Electrical Equipment	•		
18. Pesticide/Herbicide Use			
19. Emergency Planning			•
20. Asbestos Removal	•		
21. Underground Storage Tanks		•	
22. Renovation/Demolition Activities	•		•
23. New Construction Activities	•		•
24. Indoor Firing Range			
25. Marine Operations		•	
26. On-going IRP Program			•
27. Training Ranges/Impact Areas			•
28. De-icing/Salt Activities		•	
29. Open Burning/Detonation			

CONTACT/LOCATION CODES

(1) Directorate of Engineering and Housing (DEH)
(2) Environmental Coordinator (EC)
(3) Preventive Medicine Officer
(4) Safety and Health Officer
(5) Fire Department
(6) Director of Logistics (DOL)
(7) Fuels Management Officer (DOL/DEH)
(8) Transportation/Maintenance Officer (DOL)
(9) Chief of Operations and Maintenance (O&M)
(10) Range Control (DPTMSEC)
(11) Aviation Commander (DPTMSEC)
(12) Director of Plans, Training, Mobilization, and Security (DPTMSEC)
(13) Engineering, Plans, & Services (EP&S)
(14) Wastewater Treatment Plant Supervisor (O&M)
(15) Land Management Officer (DEH)
(16) Building and Grounds Division (DEH)
(17) Entomology Shop (DEH)
(18) TSDF Operators (DEH, DOL, DRMO)
(19) Shop Activity Supervisor
(20) Director of Contracting (DOC)
(21) Public Affairs Office (PAO)
(22) Staff Judge Advocate (SJA)
(23) Defense and Reutilization Marketing Office (DRMO)
(24) Utilities Division (Interior Electric Shop)
(25) Utilities Division (Exterior Electric Shop)
(26) Master Planner (DEH)
(27) Inspector General (IG)
(28) School Principal
(29) Installation Commander (IC)
(30) Army and Air Force Exchange Service (AAFES)
(31) Directorate of Personnel and Community Activities (DPCA)
(32) Directorate of Resource Management (DRM), Internal Control
(33) Golf Course Pesticide Shop
(34) Civilian Personnel Office (CPO)

Section 1

Air Emissions Management

SECTION 1

AIR EMISSIONS MANAGEMENT

A. Applicability of this Protocol

This protocol includes regulations, responsibilities, and compliance requirements associated with air pollution emissions at military communities. The major sources of air pollution emissions at military communities are:

- particulates, sulfur dioxide (SO_2), and nitrogen oxides (NO_x) from fuel burning at steam and hot water generation plants and boilers
- particulate emissions and toxic air emissions from the operation of classified material, hazardous waste, and pathological incinerators
- particulate, carbon monoxide, metals, and toxic air pollutant emissions from open burning and open detonation operations
- carbon monoxide emissions from mobile (vehicular) sources
- the emission of volatile organic compound (VOC) vapors from the storage and transfer of certain petroleum fuels and Carbon monoxide emissions from mobile (vehicular) sources chemicals (solvents), and the operation of degreasers and other processes (paint stripping and metal finishing) that use solvents
- fugitive particulate emissions from training activities and construction/demolition operations.

Most military communities have air emissions sources in most of these categories. Therefore, this protocol is applicable to some extent at all military communities.

B. DOD Regulations

- *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992, Chapter 2 outlines performance standards for fossil fuel fired steam generators, hot water generating plants, electric utility steam generators, and incinerators. Additionally, motor vehicles, ozone-depleting substances, and VOCs are also included.
- Department of Defense (DOD) Instruction 4120.14, *Environmental Pollution, Prevention, Control, and Abatement*, 10 August 1977, implements policies provided by Executive Order (EO) 12088 and Office of Management and Budget (OMB)

Circular A-106 and establishes policies for developing and submitting plans for installing improvements needed to abate air emissions from DOD military communities.

- DOD Directive 6050.9, *Chlorofluorocarbons (CFCs) and Halons*, 13 February 1989, addresses the need to manage and reduce the use of CFCs and halons on military installations.

- *Overseas Environmental Baseline Guidance Document*, July 1992, Draft, contains criteria for air emissions and performance standards applicable to DOD-owned and operated equipment.

C. Army Regulations (ARs)

- AR 40-5, *Preventive Medicine*, 15 October 1990, requires an emission inventory to be done.

- AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990, para 1-24b, requires that if the OCONUS installation is located in an area where there are no host nation environmental regulations, the installation must monitor and control air pollution to protect the health and welfare of Army personnel and dependents. If the installation is located in a host nation with air quality regulations, the installation must comply with the substantive requirements of general applicability and requirements outlined in the Status of Forces Agreement (SOFA).

- AR 420-49, *Heating, Energy Selection and Fuel Storage, Distribution, and Dispensing Systems*, 22 June 1990, establishes policy, criteria, and procedures for operation, maintenance, and repair of boiler plants and heating systems.

D. Responsibility for Compliance

- The Installation Commander (IC) is responsible for compliance and for determining the appropriate signatory for all permits.

- The Directorate of Engineering and Housing (DEH) is responsible for the maintenance of incinerators, fuel handling, and storage equipment, as well as the operation and maintenance of all fuel burners (boilers). The heating/boiler plant fuel burners are the responsibility of the Operations and Maintenance (O&M) Division.

- The Hospital or Installation Clinic is responsible for the operation of any medical/pathological incinerators located in its facility.

- The Fuels Management Branch of the Directorate of Logistics (DOL) is responsible for the operation of all fuel handling, transportation (tanks and/or pipelines), and storage facilities. It is also responsible for insuring that all fuels satisfy specifications. DOL is responsible for the operations of the Military Service Station, which dispenses leaded or unleaded fuel.

- The Vehicle Maintenance Branch of the DOL is responsible for vehicle emission testing and maintenance.

- The various maintenance facilities at the installation are responsible for the operation of degreasers and other industrial processes that are regulated or may require operating permits.

- The Army/Air Force Exchange System (AAFES) operates a service station that dispenses fuels and is subject to the host nation requirements. The service station is normally operated by a contractor, but the labeling and nozzle size regulations still apply. The installation where the service station is located is responsible for compliance, but the contractor may also be responsible, depending on the contract wording.

- The DEH Environmental Management Division is responsible for monitoring ambient air quality and preparing the installation air emission inventory.

E. Key Compliance Definitions

These definitions were obtained from the directives/instructions and ARs listed at the end of each definition. If there is no citation listed for the definition, it has been drawn from the U.S. Code of Federal Regulations (CFR).

- *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 hours (h) during that 12-month (mo) period at the maximum design heat input capacity.

- *Bulk Gasoline Terminal* - any gasoline facility that receives gasoline by pipeline, ship, or barge, and has a throughput of greater than 285,000 liters (L), or 75,000 gallons (gal) per day.

- *Chlorofluorocarbons and Halons* - as of August 1988, these include CFC-11, CFC-12, CFC-113, CFC-114, CFC-115, Halon 1211, Halon 1301, and Halon 2402 (DOD Directive 6050.9, para C).

- *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.

- *Coal Refuse* - waste products of coal mining, cleanings and coal preparation operations containing coal, matrix materials, clay, and other organic and inorganic material (OEBGD, Chapter 2, Definitions).

- *Continuous Emissions Monitoring Systems (CEMS)* - a monitoring system for continuously measuring the emissions of a pollutant from an affected facility.

- *Diesel Fuel* - any fuel sold and suitable for use in diesel motor vehicles and diesel motor vehicle engines, and commonly or commercially known or sold as diesel fuel.

- *Dual-Fuel Plant* - a heating unit, boiler, or power plant that has been completely and permanently equipped to use either of two energy sources at any time with only minor operational changes required to switch from one energy source to the other. One energy source will be designated as the "primary fuel" and the second as the "alternate fuel" (AR 420-49, Section II).

- *Dryer* - a machine used to remove petroleum solvent from articles of clothing or other textile or leather goods, after washing and removing excess petroleum solvent, together with the piping and ductwork used in the installation of this device.

- *Electric Utility Steam Generating Unit* - any furnace, boiler, or other device used for combusting fuel for the purpose of producing steam to generate electricity (OEBGD, Chapter 2, Definitions).

- *Emission Standards* - limits, established by host nation authorities, on the quality of emissions that may be discharged to the atmosphere from any regulated source (AR 200-1, Section II).

- *Fossil Fuel* - natural gas, petroleum, coal, and any form of solid, liquid, or gaseous fuel derived from such materials for the purpose of creating useful heat (OEBGD, Chapter 2, Definitions).

- *Fuel Pretreatment* - a process that removes a portion of the sulfur in a fuel before combustion of the fuel in a steam generating unit.

- *Fugitive Emissions* - air pollutants entering into the atmosphere from other than a stack chimney, vent, or other functionally equivalent opening (e.g., vapors, dust, or fumes).

- *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.

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

- *Heating Installations and Plants* - plants generating steam, hot water, or warm air that may consist of one or more furnaces, boilers, or hot water generators. The designation includes all such units in the plant, building, or room (e.g., three 100 Million British thermal units (MBtu) boilers, either in a separate heating plant or in a mechanical room in a building, constitute a 300 MBtu heating plant) (AR 420-49, Section II).

- *High Pressure Boiler Plants* - plants operating at pressures in excess of 15 pounds per square inch (psi) steam or 30 psi water with an output capacity of 3.5 MBtu or more per hour (AR 420-49, para 2-6f).

- *Incinerator* - any furnace used in the process of burning solid or liquid waste for the purpose of reducing the volume of the waste by removing combustible matter, including equipment with heat recovery systems for either hot water or steam generation (OEBGD, Chapter 2, Definitions).

- *Maximum Heat Input Capacity of a Steam Generating Unit* - determined by operating the facility at maximum capacity for 24 h and using the heat loss method described in Sections 5 and 7.3 of the American Society of Mechanical Engineers (ASME) *Power Test Codes* 4.1 no later than 180 days after initial startup of the facility and within 60 days after reaching maximum production rate at which the facility will be operated.

- *MBtu* - Mega Btu, 1,000,000 Btu output (AR 420-49, Section II).

- *Nontactical Vehicles* - commercially available vehicles that are adapted for military use (OEBGD, Chapter 2, Definitions).

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

- *Particulate Matter Emissions* - any airborne, finely divided solid or liquid material, except uncombined water, emitted to the ambient air.

- *Petroleum Dry Cleaner* - a dry cleaning facility that uses petroleum solvent in a combination of washers, dryers, filters, stills, and settling tanks.

- *PM_{10}* - particulate matter with an aerodynamic diameter less then or equal to a nominal 10 micrometers (μm).

- *Power Plants* - plants generating steam or high temperature water for the production of electric power or compressed air (AR 420-49, Section II).

- *Publication Rotogravure Printing* - any number of rotogravure printing units capable of printing simultaneously on the same continuous web or substrate and that includes any associated device for continuous cutting and folding the printed web, where the following sellable paper products are printed: catalogues; direct mail advertisements; display advertisements; magazines; miscellaneous advertisements including brochures, pamphlets, catalogue sheets, circular folders, and announcements; newspapers; periodicals; and telephone and other directories.

- *Refuse-derived Fuel (RDF)* - processsed refuse and waste suitable for use as a primary or secondary fuel in soil-fuel boilers (AR 420-49, Section II).

- *Reid Vapor Pressure* - the absolute vapor pressure of volatile crude oil and volatile nonviscous petroleum liquids except liquefied petroleum gases as determined by the ASTM, Part 17, 1973, D-323-72 (reaproved 1977).

- *Steam Generating Unit* - any furnace, boiler, or other device used for combusting fuel for the purpose of producing steam (including fossil fuel fired generators associated with the combined cycle of gas turbines; nuclear generators are not included (OEBGD, Chapter 2, Definitions).

- *True Vapor Pressure* - the equilibrium partial pressure exerted by a petroleum liquid, as determined in accordance with methods described in American Petroleum Institute Bulletin 2517, *Evaporation Loss From Floating Roof Tanks*, 1962.

- *Very Low Sulfur Oil* - an oil that contains no more than 0.5 weight percent sulfur or that, when combusted without sulfur dioxide emission control, has a sulfur dioxide emission rate equal to or less than 0.5 pound (lb) MBtu heat input.

- *VHAP Service* - a piece of equipment that either contains or contacts a fluid (liquid or gas) that is, at least 10 percent by weight, a volatile hazardous air pollutant (VHAP).

- *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.

- *Volatile Hazardous Air Pollutant (VHAP)* - a substance regulated under 40 CFR 61, Subpart V for which a standard for equipment leaks of the substance has been proposed and promulgated. Benzene and vinyl chloride are VHAPs.

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

- *Wood Residue* - bark, sawdust, slabs, chips, shavings, mill trim, and other wood products derived from wood processing and forest management operations (OEBGD, Chapter 2, Definitions).

AIR EMISSIONS MANAGEMENT PROTOCOL

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All installations	1-1 through 1-4	(1)(2)(3)(4)
Fuel Burning Facilities: (central steam plant, hot water boiler, or hot water steam boiler)		
General	1-5 through 1-17	(1)(2)(3)(9)
Fuel Burning Sources	1-18 through 1-23	(1)(2)(9)
Incinerators	1-24	(1)(2)
Gasoline Dispensing:		
General	1-25 through 1-27	(1)(6)(30)
Motor Vehicles	1-28	(1)(2)(9)
VOC Emissions or VOL Storage	1-29 through 1-32	(1)(2)(6)(9)
Fugitive Emissions	1-33 through 1-38	(1)(2)
Solvent or Vapor Degreasers	1-39	(9)
Dry Cleaning	1-40	(1)(2)(9)
CFCs and Halons	1-41 through 1-43	(2)

(a) CONTACT/LOCATION CODE:

(1) Directorate of Engineering and Housing (DEH)
(2) Environmental Coordinator (EC)
(3) Preventive Medicine Officer
(4) Safety and Health Officer
(6) Director of Logistics (DOL)
(9) Chief Operations and Maintenance (O&M)
(30) Army and Air Force Exchange Service (AAFES)

AIR EMISSIONS MANAGEMENT

Records to Review

- Emissions inventory (OMB Form 158-R75)
- All air pollution source permits
- Plans and procedures applicable to air pollution control
- Emission monitoring records and sampling data
- Opacity records
- Notifications of violations to regulatory authorities
- Instrument calibration and maintenance records
- Reports/complaints concerning air quality
- Regulatory inspection reports
- Documentation of preventive measure or action
- Results of air sampling at the conclusion of response action
- Emergency episode plan if required by the state
- Military Construction Army (MCA) development and construction plans for new facilities proposed and copies of air pollution abatement plans for these as well as existing sources requiring control. Mobile source data, number of vehicles, and traffic counts for major thoroughfares if available

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

People to Interview

- Directorate of Engineering and Housing (DEH)
- Environmental Coordinator (EC)
- Preventive Medicine Officer
- Safety and Health Officer
- Director of Logistics (DOL)
- Chief of Operations and Maintenance (O&M)
- Army and Air Force Exchange Service (AAFES)

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL INSTALLATIONS	
1-1. Determine actions or changes since previous review of air emissions (GMP).	Examine copy of previous review report to determine if noncompliance issues have been resolved. (1)(2)
...	...
1-2. Copies of all relevant DOD directives/ instructions, ARs, and guidance documents on air emissions should be maintained at the installation (GMP).	Verify that copies of the following regulations are maintained and kept current at the installation: (1)(2)(3)(4) - *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992. - DOD Instruction 4120.14, *Environmental Pollution Prevention, Control, and Abatement*, 30 August 1977. - DOD 6050.9, *Chlorofluorocarbons (CFCs) and Halons*, 13 February 1989. - AR 40-5, *Preventive Medicine*, 15 October 1990. - AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990. - AR 420-49, *Heating, Energy Selection, and Fuel Storage, Distribution, and Dispensing Systems*, 23 July 1990. - TB MED 502, *Occupational and Environmental Health: Respiratory Protection Program.* - TB MED 513, *Occupational and Environmental Health Guidelines for the Evaluation and Control of Asbestos Exposure.* - TM 5-815, *Air Pollution Control Systems for Boilers.* - OMB Form 158-R75, *USEPA Air Pollutant Emissions Report.*
...	...

(1) Department of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine (4) Safety and Health Officer (6) Director of Logistics (DOL) (9) Chief, Operations and Maintenance (O&M) (30) Army and Air Force Exchange Service (AAFES)

COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-3. Installations are required to comply with Major Army Command (MACOM) regulations and substantive host nation regulations concerning air quality (AR 200-1, para 1-40).	Verify that the installation is complying with MACOM and substantive host nation air quality requirements. (1) (NOTE: Issues typically regulated by the MACOM or host nation agencies include: - emissions limitations - air pollution episode standby plans - permits for construction and operation of sources of emissions - placement of control devices on fuel burning sources - incineration of medical, pathological, and infectious waste - open burning and detonation - 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 - perchloroethylene drycleaners - fugitive dust emissions - 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 - 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 - toxic air pollutants - indoor air pollution.)
...	...
1-4. Preventive Medicine personnel at each installation are required to conduct and maintain an up-to-date emissions inventory, listing all stationary sources of air pollution, and inspect stationary air pollution sources periodically to assess compliance with applicable standards (AR 40-5, para 11-4b).	Determine if an emission inventory has been completed recently or updated recently. (3) Verify that the emission inventory is complete and compare the inventory to any permits issued to ensure all recent changes/modifications have been included. (1)(3) Verify that periodic updates of the air emissions inventory are conducted. (3) Verify that Preventive Medicine personnel inspect stationary air sources periodically to assess compliance. (3)
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
FUEL BURNING FACILITIES **General**	
1-5. Installations that operate coal-fired, multi-grade oil, or dual-fuel systems are required to periodically review their operations to ensure the most economical fuel is being used in consistence with air pollution criteria (AR 420-49, para 2-6a).	Verify that a periodic review of the operation is conducted. (2)(3)
...	...
1-6. All fuel burning facilities must be equipped with air pollution abatement equipment or must use the type of fuel necessary to achieve environmental pollution abatement (AR 420-49, para 2-2a).	Determine if the installation has any fuel burning facilities. (2)(3) Verify that fuel burning facilities are equipped with pollution abatement equipment or are operating with the cleanest possible fuel. (2)(3)
...	...
1-7. Piping and valves (and critical equipment) in central boiler and heating plants, building mechanical rooms, outside distribution systems, and the main distribution systems in buildings are required to be marked with color banding and/or titles to indicate their contents or purpose (AR 420-49, para 2-6e).	Verify that piping and valves are marked as necessary. (2)(3)
...	...
1-8. Operating engineers are required to be certified (AR 420-49, para 2-6b).	Verify that operating engineers in central heating plants are certified according to AR 420-15. (2)(3) Verify that operators of smaller boilers and heating equipment posses a valid Department of Army (DA) Form 3941 (Certificate of Proficiency) or local equivalent certification approved by the DEH. (2)(3)
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-9. All high pressure steam boilers (above 15 psi) and all high temperature water boilers (above 250 ^{0}F) in active use are required to be inspected (AR 420-49, paras 2-12 and 2-13).	Determine if the installation operates any high pressure steam boilers or high temperature water boilers. (2)(3) Verify that high pressure boilers are inspected semiannually both internally and externally. (2)(3) Verify that high temperature water boilers are externally inspected annually while under operation. (2)(3) Verify that high temperature water boilers are inspected internally the first and second year of operation. (2)(3) (NOTE: If, after the second year of operation, the internal inspection shows no adverse conditions, the amount of make-up water is negligible, and effective chemical treatment is under control, the next inspection may be extended to 3 years (yr).)
...	...
1-10. Operating logs are required to be maintained for each high pressure boiler plant (AR 420-49, para 2-6f).	Verify that the operating logs at a high pressure boiler plant include the following: (2)(3) - DA Form 3995, *Daily Boiler Plant Operating Log* - DA Form 4367, *Repairs and Utilities Operating Log* - DA Form 3967, *Facilities Engineering Operating Log* - or equivalent computer documentation.
...	...
1-11. New or substantially modified fossil fuel-fired steam generating units with a heat input capacity of greater than 100 MBtu/h must meet specific emissions limitations for particulate matter and sulfur dioxide (OEBGD, Chapter 2, Criteria 1(a) through 1(d), Criteria 3, and Criteria 4).	Determine if the facility burns coal, oil, wood, or a combination of fuels. (1)(2) Verify that no flue gas discharged into the atmosphere contains particulate matter in excess of 43 nanograms per joule (ng/J) heat input (0.10 lb/MBtu) derived from fossil fuel or fossil fuel and wood residue. (1)(2) Verify that discharged flue gases do not exhibit more than 20 percent opacity except for one, 6-minute (min) period per hour of not more than 30 percent opacity. (1)(2) Verify that discharged flue gases do not contain sulfur dioxide in excess of 340 ng/J heat input (0.80 lb/MBtu) derived from liquid fossil fuel or liquid fossil fuel and wood residue. (1)(2) Verify that discharged flue gases do not contain sulfur dioxide in excess of 520 ng/J heat input (1.2 lb/MBtu) derived from solid fossil fuel or solid fossil fuel and wood residue. (1)(2) (NOTE: Emissions limitations and percent reduction requirements are determined on a 30-day rolling average.) (NOTE: Particulate matter and sulfur dioxide emissions criteria do not apply during periods of startup, shutdown, and malfunction.)
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-12. New or substantially modified fossil fuel-fired steam generating units with a heat input capacity of greater than 100 MBtu/h must meet specific emissions limitations for nitrogen oxides (OEBGD, Chapter 2, Criteria 1(e) through 1(g)).	Verify that flue gas discharged to the atmosphere does not contain nitrogen oxides in excess of the following: (1)(2)(9) - 86 ng/J heat input (0.20 lb/MBtu) derived from gaseous fossil fuel - 129 ng/J heat input (0.30 lb/MBtu) derived from liquid fossil fuel, liquid fossil fuel and wood residue, or gaseous fossil fuel and wood residue - 300 ng/J heat input (0.70 lb/MBtu) derived from solid fossil fuel or solid fossil fuel and wood residue - 260 ng/J heat input (0.80 lb/MBtu) derived from lignite or lignite and wood residue. Verify that low excess airflow nitrogen oxide burners are used in new construction and major modifications if they are compatible with existing combustion configurations. (1)(2)(9) (NOTE: This does not apply when a fossil fuel containing at least 25 percent by weight of coal refuse is burned in combination with gaseous, liquid, other solid fossil fuel or wood residue.)
...	...
1-13. New or substantially modified fossil fuel-fired steam generating units with a maximum design heat input capacity of greater than 100 MBtu/h are required to maintain records of ash content and fuel sulfur content (OEBGD, Chapter 2, Criteria 1(h) through 1(i)).	Verify that fuel sulfur content does not exceed 0.5 percent by weight and that the fuel sulfur content is measured and recorded for each fuel batch. (1)(2)(9) Verify that a record is maintained of ash contents and higher heating values for the fuel combusted in the source. (1)(2)(9)
...	...
1-14. Existing and new or substantially modified steam generating units or electric utility steam generating units rated greater than 100,000 Btu/h heat input are required to have an annual tune-up so that specific operation requirements are met (OEBGD, Chapter 2, Criteria 6).	Verify that the identified steam generating unit has an annual tune-up to ensure combustion efficiency of the unit so that the following requirements are met: (1)(2)(9) - carbon monoxide emissions are below 400 parts per million (ppm) by volume - the flame is stable and does not impinge on the furnace walls or burner parts - for natural gas, the minimum oxygen level at high firing rates is 0.5 percent through 3 percent - for liquid fuels, the minimum oxygen level at high firing rates is 2 percent through 4 percent.
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-15. Existing and new or substantially modified steam generating units or electric utility steam generating units rated greater than 100,000 Btu/h heat input are required to calibrate and properly operate continuous emissions monitoring system to measure oxygen emissions and carbon monoxide emissions (OEBGD, Chapter 2, Criteria 7).	Verify that the indicated steam generating units are properly calibrated and operating continuous emissions monitoring systems for oxygen emissions and carbon monoxide emissions. (1)(2)(9)
...	...
1-16. New or substantially modified steam generating units or electric utility steam generating units rated greater than 100 MBtu/h heat input are required to operate continuous emissions monitoring systems for opacity, nitrogen oxides, and the oxygen or carbon dioxide content of flue gases (OEBGD, Chapter 2, Criteria 5).	Verify that the opacity of emissions is continuously monitored except where gaseous or distillate fuels are the only fuels combusted. (1)(2)(9) Verify that nitrogen oxide emissions are continuously monitored. (1)(2)(9) Verify that the oxygen or carbon dioxide content of flue gases is continuously monitored at each location where either sulfur dioxide or nitrogen oxide emissions are monitored. (1)(2)(9)
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-17. New or substantially modified electric utility steam generating units with a rated capacity of greater than 100 MBtu/h heat input are required to meet specific emissions limitations (OEBGD, Chapter 2, Criteria 2, Criteria 3, and Criteria 4).	Verify that flue gases discharged into the environment do not contain particulate matter in excess of 13 ng/J heat input (0.03 lb/MBtu) derived from the combustion of solid, liquid, or gaseous fuel. (1)(2)(9) Verify that no gases are discharged that: (1)(2)(9) - exhibit greater than 20 percent opacity, except for one 6-min period per hour of not more than 30 percent opacity - contain in excess of 520 ng sulfur dioxide per joule heat input (1.2 lb/MBtu) and 10 percent of the potential combustion concentration derived from solid fuel - contain in excess of 340 ng of sulfur dioxide per joule heat input (0.80 lb/MBtu) and 10 percent of the potential combustion concentration derived from liquid or gaseous fuels - contain nitrogen oxides in excess of the emissions limits listed in Appendix 1-1. (NOTE: When emissions of sulfur dioxide are less than 260 ng/J heat input (0.80 lb/MBtu), a limit of 30 percent of the potential combustion concentration derived from solid fuel is required.) (NOTE: These fuels require the following percent reduction of potential combustion concentrations: gaseous fuels, 25 percent; liquid fuels, 30 percent; solid fuels, 65 percent.) Verify that fuel consumption and electrical steam output is calculated monthly in order to calculate boiler efficiency. (1)(2)(9) (NOTE: Emissions limitations and percent reduction requirements are determined on a 30-day rolling average.) (NOTE: Particulate matter and sulfur dioxide emissions criteria do not apply during periods of startup, shutdown, and malfunction.)
...	...
Fuel Burning Sources	
1-18. Fuel burning facilities with greater than 250 MBtu/h heat input should meet specific emissions standards (GMP).	Verify that: (2)(9) - opacity emissions are less than 20 percent, except one, 6-min period of no greater than 27 percent per hour - particulate emissions are not in excess of 0.10 lb/MBtu - sulfur dioxide emissions do not exceed levels outlined in Appendix 1-2 - nitrogen oxides emissions do not exceed levels outlined in Appendix 1-2.
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-19. Fuel burning facilities with greater than 250 MBtu/h heat input should have specific types of monitoring instruments installed (GMP).	Verify that the following monitors are in place: (9) - NO_2 continuous monitor - opacity monitor (except in gaseous fuel burners) - SO_2 monitor (except for fossil fuel-fired steam generators not using a fuel gas desulfurization device, and gaseous fuel burners) - fuel sampling monitor when SO_2 monitor is not required - CO_2 or O_2 monitors (except when continuous monitoring systems are not required to be installed for sulfur oxides or nitrogen oxides). Determine, by reviewing schedules of monitor calibration, if the monitors are maintained. (1)(2) Verify that for fuel consumption and electrical steam output instruments: (9) - instruments are correctly installed and operating - instruments are calibrated every 24 h - monitoring records are maintained for 2 yr. Verify that records of fuel analysis are maintained and contain: (9) - sulfur content - ash content - heating value.
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-20. Steam generating units with a maximum design heat input capacity of greater than or equal to 10 MBtu/h but less than 100 MBtu/h should meet specific standards for emissions of particulates (GMP).	Verify that facilities that combust coal or mixtures of coal with other fuels and have a heat input capacity of 30 MBtu/h or greater do not discharge particulate matter in excess of the following: (1)(2)(9) - 22 ng/J heat input (0.05 lb/MBtu) if the facility combusts only coal or coal with other fuels and has an annual capacity factor of 10 percent for the other fuels - 43 ng/J heat input (0.10 lb/MBtu) if the facility combusts coal with other fuels, and has an annual capacity factor greater than 10 percent for the other fuels. Verify that facilities that combust wood or mixtures of wood with other fuels, except coal, and have a heat input capacity of 30 MBtu/h or greater do not discharge particulate matter in excess of the following: (1)(2)(9) - 43 ng/J heat input (0.10 lb/MBtu) if the facility has an annual capacity factor for wood greater than 30 percent - 130 ng/J heat input (0.30 lb/MBtu) if the facility has an annual capacity factor for wood of 30 percent or less. Verify that facilities that combust coal, wood, or oil with a heat input capacity of greater than 30 MBtu/h do not discharge gases with greater than 20 percent opacity (6-min average), except for one 6-min period per hour of not more than 27 percent opacity. (1)(2)(9) (NOTE: Particulate matter and opacity standards apply at all times, except during periods of startup, shutdown, or malfunction.)
...	...
1-21. Steam generating units with a maximum design heat input capacity of greater than or equal to 10 MBtu/h but less than 100 MBtu/h should meet specific monitoring standards for sulfur dioxide and particulate matter (GMP).	Verify that continuous emissions monitoring systems are installed, calibrated, maintained, and operated for measuring SO_2 concentrations and either oxygen or carbon dioxide concentrations at the outlet of the SO_2 control device or the outlet of the steam generating unit if no control device is used. (1)(2)(9) Verify that if continuous emissions monitoring systems for SO_2 are not used, the fuel is sampled prior to combustion. (1)(2)(9) Verify that a continuous monitoring system is installed, calibrated, maintained, and operated for measuring opacity. (1)(2)(9)
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-22. Municipal waste combustors with a capacity greater than 225 megagrams (Mg) per day (250 tons per day) of municipal solid waste or refuse-derived fuel should meet specific operational standards (GMP).	Verify that gases are not discharged that contain the following constituents in excess of the least stringent amount listed: (1)(2) - dioxin/furan in excess of 30 ng per dry standard cubic meters (dscm) or 12 grains per billion dry standard cubic feet (gr/dscf), corrected to 7 percent oxygen (dry basis) - sulfur dioxide in excess of 20 percent of the potential sulfur dioxide emission rate, or 30 ppm by volume, corrected to 7 percent oxygen (dry basis) - hydrogen chloride in excess of 5 percent of the potential hydrogen chloride emission rate (95 percent reduction by weight or volume), or 25 ppm by volume, corrected to 7 percent oxygen (dry basis) - nitrogen oxides emissions in excess of 180 ppm by volume, corrected to 7 percent oxygen (dry basis). Verify that facilities meet the operating standards for carbon monoxide emissions outlined in Appendix 1-3. (1)(2) Verify that the following operating practices are implemented: (1)(2) - facilities do not operate at a load level greater than 110 percent of the maximum demonstrated municipal waste combustor unit load - facilities do not operate at a temperature exceeding 17 ^{0}C above the maximum demonstrated particulate matter control device temperature.
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-23. Municipal waste combustors with a capacity greater than 225 Mg/day (250 tons per day) of municipal solid waste or refuse-derived fuel should meet specific record keeping requirements (GMP).	Verify that an operating manual that is updated yearly is at the facility and indicates: (1)(2) - applicable standards - procedures for receiving, handling, and feeding municipal solid waste - startup, shutdown, and malfunction procedures - operational provisions for meeting emission standards - response procedures for emergency situations - monitoring procedures - procedures for handling ash - reporting and record keeping requirements. Verify that the following records are maintained for 2 yr: (1)(2) - emissions rates - dates when excess emissions were identified and reasons for excess emissions - operating days when the minimum numbers of hours of sulfur dioxide or nitrogen oxides emissions or operational data have not been obtained and the reasons - identification of the times when sulfur dioxide or nitrogen oxide emissions or operational data have been excluded from the calculation of average emission rates or parameters and the reason for exclusion - results of daily sulfur dioxide, nitrogen oxide, and carbon monoxide continuous emission monitoring systems drift tests and accuracy assessments - results of all annual performance tests - continuous emissions monitoring data for opacity, sulfur dioxide, nitrogen oxides, carbon monoxide, load level, and particulate matter control device temperature - names of the people who have completed the review of the operating manual - weights of municipal solid waste and other fuel combusted when being used in a cofired combustor with a municipal waste capacity greater than 225 Mg/day (250 tons) - the amount of nonmedical and medical waste combusted on a daily basis for combustors firing both medical waste and other municipal solid waste, unless it is assumed that the total heat input to the combustor is from municipal solid waste with a design heating value of 10,500 kilojoules per kilogram (KJ/Kg) or 4500 Btu/lb.
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
INCINERATORS	
1-24. New or substantially modified incinerators that burn more than 50,800 kg/day, or 50 tons/day, or that burn more than 10 percent sewage sludge are required to meet specific emissions limitations (OEBGD, Chapter 2, Criteria 8).	Verify that no gas is being discharged into the atmosphere, from any facility, that contains particulate matter in excess of 0.18 g/dscm (0.08 gr/dscf) corrected to 12 percent carbon dioxide. (1)(2) Verify that incinerators that process beryllium-containing waste, beryllium, beryllium oxide, or beryllium alloys do not emit more than 10 g of beryllium into the atmosphere over a 24-h period. (1)(2)
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
GASOLINE DISPENSING **General**	
1-25. Leaded gasoline should 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 (GMP).	Interview the DOL to determine what grades of gasoline are used, where they are dispensed, and what controls are in place to ensure proper fueling of vehicles. (6)
...	...
1-26. Fuel pumps should display specific signs (GMP).	Determine if the following requirements are met at installation fuel pumps: (6)(30) - signs, displayed at each pump stand, stating that unleaded gas should only be introduced into vehicles designed to use unleaded gasoline - nozzles are properly sized - each fuel pump is labeled, indicating the type of fuel, e.g., "unleaded gasoline" or "contains lead anti-knock compounds."
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-27. Bulk gasoline terminals with greater than 285,000 L, or 75,000 gal, of gasoline throughput per day that deliver liquid product into greater tank trucks should meet specific operating standards (GMP).	Verify that each facility has a vapor collection system designed to collect the total organic compound vapors displaced from tank trucks during product loading and to prevent the total organic compounds collected at on-loading rack from passing to another loading rack. (1)(6)(30) Verify that emissions from the vapor collection system do not exceed 35 milligrams (mg) of total organic compound per liter (L) of gasoline loaded. (1)(6)(30) Determine if the following loading procedures are followed: (1)(6)(30) - vapor tightness documentation is available for each gasoline tank truck - the tank identification number is recorded as each gasoline tank truck is loaded - each tank identification number is cross-checked with the file of tank vapor tightness documentation within 2 weeks after the tank is loaded - steps are taken to ensure that only vapor-tight tanks are loaded and that vapor collection systems are operational. Verify that the vapor collection and liquid loading equipment is designed and operated to prevent gauge pressure in the delivery tank from exceeding 4500 pascals (Pa) (450 millimeters (mm) of water) during product loading. (1)(6)(30) Verify that pressure vacuum vents in the vapor collection system do not open at a system pressure of less than 4500 Pa (450 mm of water). (1)(6)(30) Verify that a monthly inspection of the vapor collection system, the vapor processing system, and each loading rack handling gasoline is done during loading and that inspection records are kept on file for 2 yr. (1)(6)(30) Verify that leaks are repaired within 15 calendar days after detection. (1)(6)(30) Verify that records of all replacements or additions of components performed on existing vapor processing systems are kept for at least 3 yr. (1)(6)(30)
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
Motor Vehicles	
1-28. DOD-owned, nontactical vehicles are required to be maintained so as to prevent excessive emissions (OEBGD, Chapter 2, Criteria 11).	Verify that all vehicles are inspected biannually to ascertain if the factory-installed emission control equipment is intact and operational. (1)(2)(9) Verify that only unleaded gasoline is used in vehicles designed for unleaded gasoline. (1)(2)(9)
...	...
VOC EMISSIONS OR VOL STORAGE	
1-29. Publication rotogravure printing presses, except for proof presses, should meet specific standards for VOC emissions (GMP).	Determine if the installation operates any publication rotogravure printing presses. (1)(2) Verify that gases are not being discharged containing VOCs equal to more than 16 percent of the total mass of VOC solvent and water used at that facility during any one performance averaging period. (1)(2) (NOTE: Each performance averaging period is 30 consecutive calendar days.) Verify that facilities using waterborne ink systems or solvent-borne ink systems with solvent recovery systems record the amount of solvent and water used, solvent recovered, and estimated emission percentage for each calendar month, and maintain these records for 2 yr. (1)(2)(6)
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-30. Storage vessels for petroleum liquids with a storage capacity greater than 152,000 L, or 40,000 gal, should meet specific standards (GMP).	Determine if the installation has any liquid petroleum storage vessels with a capacity greater than 152,000 L, or 40,000 gal. (1)(2) Determine the true vapor pressure of the liquids stored. (1)(2) Verify that vessels storing petroleum liquid with a true vapor pressure equal to or greater than 1.5 pounds per square inch absolute (psia) but less than 11.1 psia are equipped with one of the following: (1)(2) - an external floating roof - a fixed roof with an internal floating type cover equipped with a continuous closure device between the tank wall and edges - a vapor recovery system that collects all VOC vapors and gases discharged from the storage vessel and a vapor return or disposal system to process the VOC vapors and gases to reduce emissions by at least 95 percent by weight - an equivalent, approved system. Verify that vessels storing petroleum liquids with a vapor pressure greater than 11.1 psia are equipped with a vapor recovery system that collects all VOC vapors and gases and a vapor return or disposal system that is designed to process the VOC vapors to reduce emissions by at least 95 percent by weight. (1)(2) Verify that the following testing is done: (1)(2) - gap measurement for primary seals of external floating roofs shall be measured at least once every 5 yr - gap measurement for secondary seals of external floating roofs shall be measured at least once every year. Verify that the following records are kept: (1)(2) - gap measurement for at least 2 yr following the date of measurement - the petroleum liquid stored, the period of storage, and the maximum true vapor pressure during the storage, unless the storage vessel has a vapor recovery and return or disposal system.
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-31. Storage vessels for volatile organic liquids (VOLs) with a capacity of greater than or equal to 40 m^3 (approximately 40,155 L, or 10,567 gal, should meet specific standards (GMP).	Determine if any of the storage vessels on the installation meet these parameters. (1)(2)(6) Determine what the vapor pressure is of the liquids being stored in the vessels. (1)(2)(6) Verify that storage vessels with a design capacity greater than or equal to 151 m^3, containing VOL with a vapor pressure equal to or greater than 5.2 kilopascals (kPa) but less than 76.6 kPa, or storage vessels with a capacity greater than or equal to 75 m^3 but less than 151 m^3, containing VOL that has a maximum vapor pressure equal to or greater than 27.6 m^3 but less than 76.6 kPa, are equipped with one of the following: (1)(2)(6) - a fixed roof in combination with an internal floating roof - an external floating roof - a closed vent system and control device that reduces emissions by 95 percent by weight - an approved equivalent system. Verify that storage vessels with a design capacity greater than or equal to 75 m^3 containing a VOL with a maximum true vapor pressure greater than or equal to 76.6 kPa is equipped with one of the following: (1)(2)(6) - a closed vent system and control device that reduces emissions by 95 percent by weight - an approved equivalent alternative method. Verify that the accumulated areas or gaps do not exceed: (1)(2)(6) - 212 square centimeters cm^2/m of tank diameter between the tank wall and the primary seal and the width of any portion of any gap does not exceed 3.81 cm - 21.2 cm^2/m of tank diameter between the tank wall and the secondary seal and the width of any portion of any gap does not exceed 1.27 cm.
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

1-32. Storage vessels for VOLs with a capacity of greater than or equal to 40 m^3 should meet specific inspection and documentation standards (GMP).	Verify that the following inspections are made: (1)(2)(9)
	- internal floating roofs, primary seals, and secondary seals shall be inspected for holes, tears, or defects before filling the tank
	- vessels with a liquid-mounted or mechanical shoe primary seal shall have the internal floating roof and primary or secondary seals visually inspected at least once every 12 mo after the initial fill
	- verify that as problems are found, the vessel is either repaired or removed from service within 45 days
	- vessels with a double-seal system are inspected at least every 5 yr
	- internal floating roofs, primary seals, secondary seals, gaskets, slotted membranes, and sleeve seals are to be inspected each time the storage vessel is emptied and degassed
	- when control equipment is installed, measurement of gap areas is done:
	  - at least once every 5 yr for gaps between the tank wall and the primary seal
	  - at least once a year for gaps between the tank wall and the secondary seal.
	
	Verify that for vessels with a design capacity greater than or equal to 151 m^3, storing a liquid with a maximum true vapor pressure greater than or equal to 3.5 kPa, or with a design capacity greater than or equal to 75 m^3 but less than 151 m^3, storing a liquid with a true vapor pressure greater than or equal to 15.0 kPa, a record is kept of the VOL stored, the period of storage, and the maximum true vapor pressure of that VOL during the storage period. (1)(2)
	
	(NOTE: This does not apply to vessels storing a waste mixture of indefinite or variable composition or vessels equipped with a closed vent system and control device.)

...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
FUGITIVE EMISSIONS	
1-33. The emission of volatile hazardous air pollutants (VHAPs), which includes vinyl chlorides and benzene, from pumps, compressors, pressure relief devices, sampling connection systems, flanges and other connectors, and product accumulator vessels operating in VHAP service should be managed according to specific requirements (GMP).	Determine where the installation operates sources in VHAP service. (1)(2) Verify that when a leak is detected: (1)(2) - weatherproof and readily visible identification marked with the equipment identification number, is attached to the leaking equipment - the identification is removed only after no leak has been detected for 2 mo or the leak is repaired - leaks detected for pumps, compressors, pressure-relief devices in liquid service, and flanges are recorded in a log that is maintained for 2 yr at a readily accessible location. Verify that the following records are maintained: (1)(2) - a list of identification numbers of all equipment to which a standard applies - a list of equipment designated for no detectable emissions - dates of compliance tests - a list of identification numbers for equipment in vacuum service - information and data used to demonstrate that a piece of equipment is not in VHAP service.
...	...
1-34. The emission of VHAPs, which includes vinyl chlorides and benzene, from pumps in VHAP service should be monitored and controlled (GMP).	Determine where the installation operates pumps in VHAP service. (1)(2) Verify that pumps meet the following standards: (1)(2) - they are visually inspected weekly for leaks - they are monitored monthly using standard test methods for leaks - leaks are repaired within 15 days.
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

1-35. The emission of VHAPs, which includes vinyl chlorides and benzene, from compressors in VHAP service should be monitored and controlled (GMP).	Determine where the installation operates compressors in VHAP service. (1)(2)
	
	Verify that compressors meet the following: (1)(2)
	
	- they are equipped with a seal system that includes a barrier fluid system and prevents leakage of process fluids and:
	  - operates with the barrier fluid at a pressure greater than the compressor stuffing box pressure, or
	  - is equipped with a barrier fluid system that is connected by a closed-vent system to a control device, or
	  - is equipped with a system that purges the barrier fluid into a process stream with zero VHAP emissions
	  - contains barrier fluid that is not in VHAP service
	- barrier fluid systems are equipped with a sensor to detect the failure of the seal system, barrier fluid system, or both, and sensors are checked daily or have an audible alarm, unless the compressor is located within the boundary of an unmanned plant site
	- leaks are repaired within 15 days.

...	...
1-36. The emission of VHAPs, which includes vinyl chlorides and benzene, from pressure relief devices, sampling connection systems, flanges and other connectors, and product accumulator vessels operating in VHAP service should be monitored and controlled (GMP).	Determine where the installation operates sources in VHAP service. (1)(2) Verify the pressure relief devices in gas/vapor service meet the following, except during pressure releases: (1)(2) - they are operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background - after a pressure release, the device is returned to a state of no detectable emissions within 5 days. Verify that sampling connectors are equipped with a closed-purge system or closed-vent system that: (1)(2) - returns the purged process fluid directly to the process line, or - collects and recycles the purged process fluid, or - is designed and operated to capture and transport all purged process fluid to a control device. Verify that pressure relief devices in liquid service and flanges and other connectors are monitored within 5 days if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method and repaired within 15 days. (1)(2) Verify that product accumulator vessels are equipped with a closed-vent system capable of capturing and transporting any leakage from the vessel to a control device. (1)(2)
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-37. Valves and lines in VHAP service, including those exposed to vinyl chlorides and benzene, should be operated according to specific procedures (GMP).	Determine what valves and lines at the installation are in VHAP service. (1)(2) Verify that open-ended valves or lines are equipped with a cap, blind flange, or second valve that seals the open end at all times, except during operations requiring process fluid flow through the valve or line. (1)(2) Verify that open-ended valves or lines with a second valve are operated so that the valve on the process fluid end is closed before the second valve is closed. (1)(2)
...	...
1-38. Systems and devices used to control VHAP emissions, including benzene and vinyl chloride emissions, should be operated according to specific standards (GMP).	Verify that closed-vent systems and control devices used to control VHAP emissions meet the following: (1)(2) - vapor recovery systems are designed and operated to recover the organic vapors vented to them with 95 percent efficiency or greater - enclosed combustion devices are designed and operated to reduce the VHAP and benzene emissions vented to them with an efficiency of 95 percent or greater or provide a minimum residence time of 0.50 seconds at a minimum temperature of 760 ^{o}C - closed-vent systems shall have no detectable emissions, be monitored annually, and have leaks repaired within 15 days - systems are operated at all times when emissions may be vented to them. Verify that for closed-vent systems and control devices, the following records are kept in a readily accessible location: (1)(2) - detailed schematics - dates and descriptions of any changes to the system - periods when they are not operating - dates of startups and shutdowns.
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
SOLVENT OR VAPOR DEGREASERS	
1-39. Vapor degreasers in use after 1 January 1995 are required to incorporate systems to minimize the direct release of VOCs to the atmosphere (OEBGD, Chapter 2, Criteria 10).	Verify that systems such as covered or refrigerated systems are being used. (9)
...	...
DRY CLEANING	
1-40. Petroleum solvent dry cleaning dryers, washers, filters, stills, and settling tanks at petroleum dry cleaning plants with a total manu facturer's rated dryer capacity equal to or greater than 38 kilograms (kg) (84 lb) should meet specific standards of operation (GMP).	Verify that dryers are solvent recovery dryers. (1)(2)(9) Verify that the petroleum solvent filters are cartridge filters that are drained in their sealed housing for at least 8 h before their removal. (1)(2)(9) Verify that a clearly visible label, regarding fire protection and inspection, is posted on the dryer. (1)(2)(9)
...	...
CFCs AND HALONS	
1-41. Installations that procure CFCs and halons must do a CFC and Halon Annual Report (OEBGD, Chapter 2, Criteria 9(a); DOD Directive 6050.9, para D and E).	Determine if the CFC and Halon Annual Report (DD Form 2530) has been completed. (2) (NOTE: The reviewer should keep a copy of the report, as it will be used in later stages of the review when facilities are inspected.) Inspect areas where CFCs and halons are used/stored for the following requirements: (2) - dependence on CFCs and halons is reduced - emissions are being minimized - conservation practices have been implemented. Verify that the installation is working toward the goals in Appendix 1-4. (2)
...	...

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COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
1-42. Specific operating requirements must be met during the servicing of CFC or halon containing sources (OEBGD, Chapter 2, Criteria 9(b) through 9(c)).	Verify that all repairs or services to nontactical vehicle air conditioners use commercially available refrigerant recycling equipment, operated by trained personnel. (2) Verify that no activity intentionally vents any Class I or Class II CFC refrigerant in the process of maintaining, servicing, repairing, or disposing of an appliance or refrigeration unit, or during an industrial process. (2) (NOTE: See Appendix 1-5 for a list of Class I and Class II substances.)
...	...
1-43. In order to minimize atmospheric emissions of ozone-depleting substances, specific practices should be instituted at the installation (GMP).	Verify that ozone-depleting substances are procured only in the absence of suitable alternatives. (2) Verify that there is no disposal of ozone-depleting substance by direct release to the atmosphere. (2) Verify that ozone-depleting substances are recycled. (2)

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Appendix 1-1

Nitrogren Oxides Emissions for New or Substantially Modified Electric Utility Steam Generating Units

	Nanograms per Joule	Emission Limits lb/MBtu
Gaseous Fuels		
Coal-derived	210	0.50
Other	86	0.20
Liquid Fuels		
Coal-derived and shale oil	210	0.50
Other	130	0.30
Solid Fuels		
Coal-derived	210	0.50
Subbituminous	210	0.50
Bituminous	260	0.60
Anthracite	260	0.60
Other	260	0.60

Appendix 1-2

Standards of Performance, 40 CFR Part 60

Source Category	Fuel Type	Pollutant	Emission Level	Monitoring Requirement
		Subpart D		
Steam generators* (> 250 MBtu/h) constructed or modified after 8/17/71	Solid Fossil Fuel	Particulate Opacity SO_2 NO_x (except lignite and coal refuse)	0.10 lb/MBtu 20%; 27% 6 min/h 1.2 lb/MBtu 0.70 lb/MBtu	None Continuous Continuous Continuous
	Liquid Fossil Fuel	SO_2 NO_x	0.80 lb/MBtu 0.30 lb/MBtu	Continuous Continuous
	Gaseous Fossil Fuel	NO_x	0.20 lb/MBtu	Continuous
	Lignite	NO_x	0.60 lb/MBtu	Continuous
	Lignite mined in ND, SD, or MT, burned in a cyclone fired unit	NO_x	0.80 lb/MBtu	Continuous
		Subpart E		
Incinerators (> 50 tons/day) constructed or modified after 8/17/71	Inciner-ators	Particulate CO_2	0.08 gr/dscf** corrected to 12% CO_2	Record of daily charging rates and hours of operation

***Does not include electric utility steam generating unit that started construction or modification after 18 September 1978.**

****gr/dscf - grains per dry standard cubic foot**

Appendix 1-3

Municipal Waste Combustor Operating Standards for Carbon Monoxide

Municipal Waste Combustor Technology	Emission Limit (ppm by volume)
Mass burn waterwall	100
Mass burn refractory	100
Mass burn rotary waterwall	100
Modular starved air	50
Modular excess air	50
RDF stoker	150
Bubbling fluidized bed combustor	100
Circulating fluidized bed combustor	100
Coal/RDF mixed fuel fired combustor	150

Appendix 1-4

Department of Defense Goals for Reduction Releases, Procurement, and Use of Ozone-Depleting Substances

Phase I	Phase II	Phase III	Phase IV	Phase V
Institute plans to reduce unnecessary releases during operation, maintenance, and training.	Institute plans to eliminate procurement and use.	Stop use in new procurements.	Phaseout of current applications to 50 percent of 1986 levels.	Reduce use in all applications to zero.

Goals for CFCs

	Phase I	Phase II	Phase III	Phase IV	Phase V
Category III	OCT 90	OCT 92	OCT 96	OCT 96	OCT 2000
Category II	OCT 90	OCT 93	OCT 97	OCT 97	OCT 2000*
Category I	OCT 90	OCT 93	OCT 98	OCT 98	Upon available substitutes

Goals for Halons

Category III	OCT 90	OCT 90	OCT 90	---	OCT 95
Category II	OCT 90	OCT 90	OCT 90	OCT 95	OCT 2000*
Category I	OCT 90	OCT 90	OCT 95	OCT 95	Upon available substitutes

*Meet requirement from recycle or inventory.

NOTE: All phaseout goals are dependent on development of suitable substitutes for ozone-depleting substances in a timely manner. To prevent interruption of supplies for mission-critical uses (Category I), these uses will be identified and plans initiated not later than October 1990 to recycle existing stocks and initiate stockpiling of sufficient quantities of ozone-depleting substances to allow operation for the useful life of the weapons system.

Category I: *Mission-Critical Uses* -- The highest-priority uses will be those that are mission critical. Mission-critical uses have a direct impact on combat mission capability and include uses that are integral to combat mission assets or affect operability of these assets. Mission-critical uses include cooling operational suppression systems in tactical vehicle crew compartments to protect the lives of mission-critical personnel.

Category II: *Essential Uses* -- Essential uses include those applications that have an indirect effect on combat mission assets and play an auxiliary role in ensuring the operability of those assets. Essential uses include process cooling applications and charging portable fire extinguishers for electronic area protection.

Category III: *Nonessential Uses* -- This category includes all nonessential uses. Nonessential uses include uses for comfort cooling in family housing and installation support activities.

Appendix 1-5

Class I and II Ozone Depleting Substances

CFC-11	CFC-12
CFC-13	CFC-111
CEC-112	CFC-113
CFC-114	CFC-115
CFC-211	CFC-212
CFC-213	CFC-214
CFC-215	CFC-216
CFC-217	Halon-1211
Halon-1301	Halon-2402
Carbon Tetrachloride	Methyl Chloroform
HCFC-21	HCFC-22
HCFC-31	HCFC-121
HCFC-122	HCFC-123
HCFC-124	HCFC-131
HCFC-132	HCFC-133
HCFC-141	HCFC-142
HCFC-221	HCFC-222
HCFC-223	HCFC-224
HCFC-225	HCFC-226
HCFC-231	HCFC-232
HCFC-233	HCFC-234
HCFC-235	HCFC-241
HCFC-242	HCFC-243
HCFC-244	HCFC-251
HCFC-252	HCFC-253
HCFC-261	HCFC-262
HCFC-271	

INSTALLATION:	COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT Worldwide ECAS	DATE:	REVIEWER(S):

STATUS NA C RMA	REVIEWER COMMENTS:

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer (4) Safety and Health Officer (6) Director of Logistics (DOL) (9) Chief Operations and Maintenance (O&M) (30) Army and Air Force Exchange Service (AAFES)

Section 2

Hazardous Materials Management

SECTION 2

HAZARDOUS MATERIALS MANAGEMENT

A. Applicability of this Protocol

Most military communities handle many chemicals and substances that may be considered hazardous if not handled, stored, or used properly. A complete list of chemicals used at military communities is too lengthy to include in this protocol, but many of the materials are hazardous, i.e., toxic chemicals, flammable substances, reactive substances, and corrosive materials.

This protocol 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 that require special management practices at military communities and are addressed in separate protocols. Radioactive substances and the general category of hazardous wastes are also not included in this protocol. This protocol does not focus on individual hazardous chemicals or substances used at military communities. It deals with the generic requirements and good management practices associated with minimizing impacts on the environment from spills or releases of hazardous materials as a result of improper storage and handling. As a general rule, most sections of this protocol will be applicable to most military communities.

All underground storage tank regulations that apply to hazardous materials have been consolidated into Section 7, *Petroleum, Oils, and Lubricants (POL) Management.*

B. DOD Regulations

- *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992, Chapter 5 contains criteria for the storage, handling, and disposition of hazardous materials used by Department of Defense (DOD) installations. Chapter 19 addresses hazardous substance underground storage tanks.

- DOD Directive 4145.19-R-1, *Storage and Materials Handling*, September 1979, Chapter 5, Section 4, *Hazardous Commodities*, provides overall guidance for storage and handling of various types of hazardous commodities at military communities.

C. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990 instructs OCONUS commanders to monitor the management of hazardous materials, obtain Army guidance on management of hazardous materials, and program and budget resources for the management of hazardous materials.

D. Responsibility for Compliance

- The Director of Logistics (DOL) has the primary responsibility to receive, store, and issue all hazardous commodities. The DOL reviews all items that have potential health hazards and determines if an issue exception code should be assigned to the item before being placed in storage. The receipt of hazardous materials with proper documentation and shipping papers is also the responsibility of the DOL. The DOL oversees the proper maintenance and operation of flammable/combustible materials storage facilities, acid storage facilities, and compressed gas storage facilities, and ensures all hazardous materials are properly labeled.

- The Medical Department Activity (MEDDAC)/Medical Center (MEDCEN) is responsible for reviewing the issue exception codes for hazardous materials assigned by DOL and for approving or disapproving the recommendations.

- The Directorate of Engineering and Housing (DEH) is responsible for the storage and handling of all hazardous materials used by the DEH shops in properly designed facilities. The DEH is also responsible for reporting releases of hazardous materials to appropriate authorities.

- The Unit/Activity Commanders are responsible for the storage and handling of all hazardous materials used by their activity.

- The Installation Fire Department provides support in emergency response, spill events, exercises, and fire protection activities. In addition, the department is responsible for making periodic fire safety inspections of flammable/combustible storage and handling areas on the military community.

- The Safety Officer is responsible for conducting evaluations of work place safety and inspections of the handling and storage of hazardous materials. The Safety Officer provides the appropriate manager with a report of findings and recommended corrective actions. The Safety Officer is also responsible for ensuring the prompt and accurate investigation of any hazardous material mishaps that result in injury or property damage.

E. Key Compliance Definitions

These definitions were obtained from the directives/instructions and ARs listed at the end of each definition. If there is no citation listed for the definition, it has been drawn from the U.S. Code of Federal Regulations (CFR).

- *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.

- *Boiling Point* - the temperature at which a liquid starts to boil when at atmospheric pressure (14.7 pounds per square inch absolute (psia), as determined by American Society for Testing and Materials (ASTM) Test D-86-72).

- *Closed Container* - a container sealed with a lid or other closing device that liquid and/or vapor will not escape from at ordinary temperatures.

- *Combustible Liquid* - a liquid with a flashpoint at or above 100 ^{o}F (37.8 ^{o}C). Combustible liquids are categorized as Class II or Class III liquids and are further subdivided as follows:

    1. Class II liquids are those with a flashpoint at or above 100 ^{o}F (37.8 ^{o}C), and below 140 ^{o}F (60 ^{o}C) except any mixture having components with a flashpoint of 200 ^{o}F (93.3 ^{o}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 with a flashpoint at or above 140 ^{o}F (60 ^{o}C), and below 200 ^{o}F (93.4 ^{o}C), except any mixture having components with flashpoint of 200 ^{o}F or higher, the total volume of which makes up 99 percent of more of the total volume of the mixture
    3. Class III B liquids are those having a flashpoint at or above 200 ^{o}F (93.4 ^{o}C).

- *Fire Area* - that portion of a building separated from the remainder by construction with a rated fire resistance of at least 1 hour (h) and with all communicating openings properly protected by an assembly with a fire resistance rating of at least 2 h.

- *Flammable Aerosol* - an aerosol that is required to be labeled "Flammable" under the Federal Hazardous Substance Labeling Act (15 United States Code (USC) 1261). These aerosols are considered Class IA liquids.

- *Flammable Liquid* - a liquid with a flashpoint below 100 ^{o}F (37.8 ^{o}C), except any mixture having components with flashpoints of 100 ^{o}F or higher, the total of which makes 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:

1. Class 1A are those with a flashpoint below 73 ^{o}F (22.8 ^{o}C) and boiling point below 100 ^{o}F (37.8 ^{o}C)
2. Class 1B are those with a flashpoint below 73 ^{o}F (22.8 ^{o}C) and boiling points at or above 100 ^{o}F (37.8 ^{o}C)
3. Class 1C are those with a flashpoint at or above 73 ^{o}F (22.8 ^{o}C) and below 100 ^{o}F (37.8 ^{o}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.

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

- *Hazardous Material* - any material capable of posing an unreasonable risk to health, safety, or the environment if improperly stored, handled, issued, transported, labeled, or disposed of because it displays a characteristic identified in Appendix 2-1 or the material is listed in Appendix 3-2 of the *Hazardous Waste Management* section. Munitions are excluded (OEBGD, Chapter 5, Definitions).

- *Hazardous Material Information System (HMIS)* - the computer-based information system developed to accumulate, maintain, and disseminate important information on hazardous materials used by DOD (OEBGD, Chapter 5, Definitions).

- *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.

- *Material Safety Data Sheet (MSDS)* - a form used by manufacturers of chemical products to communicate to users the chemical, physical, and hazardous properties of their product (OEBGD, Chapter 5, Definitions).

- *Portable Tank* - a closed container having a liquid capacity over 60 gallons (gal) and not intended for fixed installation.

- *Pressure Vessel* - a storage tank or container designed to operate at pressures above 15 pounds per square inch gauge (psig).

- *Safety Can* - an approved flammable liquid container with a spring closing lid, spout cover, and other features designed to safely relieve internal pressure and to provide safe storage for the liquid.

HAZARDOUS MATERIALS MANAGEMENT

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS	CONTACT THESE PERSONS OR GROUPS:(a)
All installations	2-1 through 2-9	(1)(2)(6)(7)(8)(9)
Hazardous Materials Storage and Handling	2-10 through 2-13	(1)(2)(6)
Storage/Dispensing Areas		
General	2-14 through 2-23	(1)(2)(6)(7)
Industrial Areas	2-24 through 2-26	(6)(7)
Bulk Storage		
Compressed Gases	2-27 through 2-29	(1)(3)(6)(7)
Acids	2-30	(1)(6)(7)
Transportation of Hazardous Materials	2-31 through 2-34	(6)(9)
Off-Site Contamination	2-35	(1)(2)
Releases	2-36 and 2-37	(1)(2)

(a)CONTACT/LOCATION CODE:

(1) Directorate of Engineering and Housing (DEH)
(2) Environmental Coordinator (EC)
(3) Preventive Medicine Officer
(6) Director of Logistics (DOL)
(7) Fuels Management Officer (DOL/DEH)
(8) Transportation/Maintenance Officer (DOL)
(9) Chief Operations and Maintenance (O&M)

HAZARDOUS MATERIALS MANAGEMENT

Records to Review

- Spill Control and Contingency Plan
- Spill Reports
- Hazardous Material Inventory
- MSDS Inventory Records
- MSDS Training Records
- MSDS Shipping Documents
- MSDS Placarding of Materials

Physical Features to Inspect

- Hazardous Material Storage Areas (DOL - Supply, Shops)
- Shop Activities
- Flammable Storage Cabinets
- Shipping and Receiving Areas
- Supply and Storage Shops (DEH, DOL)
- Self Service Supply Center (DOL)
- Military Unit Supply/Storage Areas
- Print/Reproduction Shop

People to Interview

- Directorate of Engineering and Housing (DEH)
- Environmental Coordinator (EC)
- Preventive Medicine Officer
- Director of Logistics (DOL)
- Fuels Management Officer (DOL/DEH)
- Transportation/Maintenance Officer (DOL)
- Chief Operations and Maintenance (O&M)

COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL INSTALLATIONS	
2-1. Determine actions or changes since previous review of hazardous materials management (GMP).	Determine if noncompliance issues have been resolved by obtaining a copy of the previous review report. (1)
...	...
2-2. Copies of all relevant DOD directive/ instruction, ARs, and guidance documents on hazardous materials should be maintained at the installation (GMP).	Verify that the following documents are maintained and kept current at the installation. (1)(6)(7)(8)(9) - *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992. - DOD 4145.19-R-1, Chapter 5, Section 4, *Storage and Materials Handling*, September 1979. - DOD Directive 4210.15, *Hazardous Material Pollution Prevention*, 27 July 1989. - DOD Directive 5100.50, *Protection and Enhancement of Environmental Quality*, 24 May 1973. - DOD Instruction 6050.5, *Hazardous Material Information System*, 25 January 1978. - DOD Directive 6050.8, *Storage and Disposal of NonDOD Owned Hazardous or Toxic Materials in DOD Installations*, 27 February 1986. - AR 40-5, *Preventive Medicine*, 15 October 1990. - AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990. - AR 200-2, *Environmental Effects of Army Action*, 23 December 1988. - AR 385-10, *The Army Safety Program*, 23 May 1988. - AR 700-141, *Hazardous Materials Information System*, 20 January 1987. - AR 740-32, *Responsibilities for Technical Escort of Dangerous Materials*, 5 June 1975. - EO 12088, *Federal Compliance with Pollution Standards.* - NFPA, *Fire Protection Guide of Hazardous Materials.*
...	...
2-3. Installations are required to comply with Major Army Command (MACOM) regulations and substantive applicable host nation regulations concerning hazardous materials (AR 200-1, para 1-40).	Verify that the installation is complying with applicable MACOM and host nation substantive hazardous materials requirements. (1)(2) (NOTE: Issues typically regulated by the MACOM or host nation agencies include: - transportation of hazardous materials - storage of hazardous materials - release reporting requirements.)
...	...

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer (6) Director of Logistics (DOL) (7) Fuels Management Officer (DOL/DEH) (8) Transportation/Maintenance Officer (DOL) (9) Chief Operations and Maintenance (O&M)

COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
2-4. A master listing of all hazardous substances at handling, storage, and transfer facilities is required as a part of the Spill Prevention, Control, and Countermeasures (SPCC) Plan (OEBGD, Chapter 5, Criteria 5 and AR 200-1, para 8-4b(4)).	Determine if there is a hazardous substances list. (1)(2)(9) Determine the locations of all hazardous materials storage areas on installation by interviewing personnel. (1)(6)(7)(8)(9)
...	...
2-5. MSDSs are required for each chemical procured or stored at the installation (OEBGD, Chapter 5, Criterias 6 and 7; AR 200-1, para 1-24a(3)(a)).	Verify that an MSDS is on file for each chemical procured by reviewing records. (1)(2) Verify that an MSDS is readily accessible for each hazardous chemical in the workplace during each work shift. (1)(2) Verify that the MSDS sheets are in English and contain at least the following information: (1)(2) - identity used on the label - physical and chemical characteristics of the hazardous chemical - physical hazards of the chemical - health hazards of the chemical - primary route of entry - Occupational Safety and Health Act (OSHA) permissible exposure limit and any other pertinent exposure limit - whether the chemical has been found to be a potential carcinogen - any generally applicable precautions - any generally applicable control measures - emergency and first aid procedures - date of preparation or last change - name, address, and telephone number of the chemical manufacturer, importer, employer or other responsible party preparing or distributing the MSDS who can provide additional information on the chemical and appropriate emergency procedures. Verify that MSDSs are obtained or prepared for locally purchased items. (1)(2)
...	...
2-6. Personnel who manage, use, store, and/or ultimately dispose of hazardous materials must be trained (OEBGD, Chapter 5, Criteria 11 and AR 200-1, para 5-1a(5)).	Verify that personnel who manage, use, store, and/or ultimately dispose of hazardous materials are trained in spill response and related handling issues. (1)(2)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-7. Hazardous material management is to be considered an integral part of the Army Hazardous Waste Minimization Program (OEBGD, Chapter 5, Criteria 9 and AR 200-1, para 6-6(b)).	Confirm that the installation has an Army Hazardous Waste Minimization Program and that it addresses hazardous material management through the use of: (1)(2) - process substitution - material recovery - recycling - acquisition - reuse.
...	...
2-8. The installation should coordinate with the fire department concerning the types of hazardous chemicals used at the installation, the areas where they are used, what they are used for, and the quantities used in a given operation (GMP).	Review coordination efforts with fire the department. (7) Determine if the fire department is aware of areas that are at high risk for chemical incidents. (7)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

2-9. Installations should have a written Oil and Hazardous Substance Contingency Plan (OHSCP) for spill events (GMP).	Verify that the OHSCP contains the following items while interviewing personnel from Installation Supply, Fire Department, Safety Department, and Department of Engineering and Housing: (1)(6)(7)(8)(9)
	
	- all hazardous substances storage areas are included in the plan
	- one individual or department is designated to initiate spill response
	- plan is written, reviewed, and made available to other departments on installation
	- plan is rehearsed through periodic drills and demonstrations
	- materials and equipment needed to manage a spill are specified in the plan readily available, including:
	  - respiratory protection
	  - absorbents
	  - ear/eye protection
	  - spill kits
	  - protective clothing
	  - neutralizers
	- response materials and protective clothing are readily available
	- emergency medical procedures and first aid materials are specified in the plan
	- hazard control materials are listed in plan and readily available, including:
	  - hazard signs and labels
	  - rope, wire, and tape
	  - monitors and survey meters
	- plan specifies phone numbers of Federal, state, and local agencies that must be notified when a spill occurs
	- plan includes contacts for agencies that provide emergency advice and assistance Chemical Transportation Emergency Center (CHEMTREC)
	- plan specifies personnel decontamination procedures that must be followed after spill has been cleaned up.
	
	(NOTE: This same plan is necessary for auditing oil related operations in POL management.)

...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
HAZARDOUS MATERIALS **Storage and Handling**	
2-10. Installations may not allow the storage of non-DOD-owned toxic or hazardous materials on site (DOD Directive 6050.8, para D, AR 200-1, para 5-4).	Verify that the installation does not allow the storage of non-DOD-owned toxic or hazardous materials on site. (1)(6) (NOTE: This does not apply to: - agreements with General Services Administration for the storage of strategic and critical materials in the National Stockpile Program - agreements between DOD Components and other Federal agencies for temporary storage or disposal of explosives - emergency lifesaving assistance to civil authorities involving the temporary storage or disposal of explosives - excess explosive generated under a DOD contract - arrangements with the Department of Energy for the temporary storage of nuclear materials or non-nuclear classified materials - military resources used during peacetime civil emergencies - assistance and refuge for commercial carriers carrying material of other Federal agencies during transportation emergencies.)
...	...
2-11. All hazardous materials on DOD installations are required to be labeled and have MSDS information either attached or in Hazardous Materials Information System (HMIS) throughout the life cycle of the materials (OEBGD, Chapter 5, Criteria 8).	Verify that materials are labeled with a *Hazardous Chemical Substance Warning Label* and the MSDS is on hand or available through HMIS throughout the life-cycle of the material. (1)(2)
...	...
2-12. All excess hazardous materials are required to be processed through Defense Reutilization and Marketing Services (DRMS) (OEBGD, Chapter 5, Criteria 10).	Verify that excess hazardous materials are turned over to DRMS. (1)(2) Verify that DRMS donates, transfers, or sells excess hazardous materials to environmentally responsible parties. (1)(2)
...	...
2-13. The installation is required to prevent the unauthorized entry of people or livestock into the hazardous materials storage areas (OEBGD, Chapter 5, Criteria 12).	Verify that unauthorized entry is prevented by examining the following types of hazardous materials storage areas: (1)(2) - paint storage - pesticides storage - solvents storage.

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
STORAGE/ DISPENSING AREAS **General**	
2-14. Hazardous materials dispensing areas are required to be properly maintained (OEBGD, Chapter 5, Criteria 2).	Verify that drums and containers in hazardous materials dispensing areas are not leaking. (1)(2) Verify that drip pans/absorbent materials are placed under containers as needed in order to collect drips or spills. (1)(2) Verify that container contents are clearly marked. (1)(2) Verify that the dispensing area is located away from catch basins and storm drains. (1)(2)
...	...
2-15. Flammable/combustible liquids should not be stored in ways that limit the use of exits, stairways, or areas normally used for the safe egress of people (GMP).	Verify that exits or common traffic routes are not blocked. (6)(7) (NOTE: See Appendix 2-2 for guidelines for the maximum allowable capacity of containers and portable tanks based on specifications of the container and substance being stored.)
...	...
2-16. Specific GMPs should be considered when storing and handling flammable/ combustible materials (GMP).	Verify that the following GMPs are followed: (6)(7) - positive sources of ignition (open flames, welding, radial heat, mechanical sparks) are not 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 - aerosol containers are stored in well ventilated areas (NOTE: These GMPs are suggested in DOD Directive 4145.19-R-1.)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
2-17. Containers of flammable/combustible materials are required to be stored and handled according to specific practices (OEBGD, Chapter 5, Criteria 1 and DOD Directive 4145.19-R-1, para 5-404i).	Verify that containers are stored and handled such that: (6)(7) - 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 oldest material used first - there are no open containers - containers are inspected periodically while in storage.
...	...
2-18. Storage cabinets used for the storage of flammable/combustible liquids should meet specific requirements (GMP).	Verify that storage cabinets meet the following: (1)(6)(7) - no more than 228 liters (L), or no more than 60 gallons (gal), of Class I or Class II liquids nor any more than 456 L (120 gal) of Class III liquids are stored in the cabinet - the cabinets are fire resistant - cabinets are constantly closed and are conspicuously labeled *"FLAMMABLE--Keep Fire Away."*
...	...
2-19. Storage cabinets used for the storage of flammable/combustible liquids should be handled properly (GMP).	Verify that storage cabinets meet the following: (1)(6)(7) - materials within the cabinet are segregated - there are no open containers within the cabinet - all containers in the cabinet are labeled.
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-20. indoor flammable/combustible storage rooms must meet certain specifications (OEBGD, Chapter 5, Criteria 1 and DOD Directive 4145.19-R-1, para 5-404c).	Verify that the installation's flammable/combustible storage facility has the following: (1)(6)(7) - walls meet fire resistance test of National Fire Protection Association (NFPA) 251-1969 - a 10 centimeters (cm), or 4-inch (in.) raised sill or ramp is provided to adjacent rooms or buildings, or the floor of the storage area is 10 cm (4 in.) lower than the surrounding floors - if sill or ramp is not present, an open grated trench that drains to a safe area is in the building - liquid tight wall/floor joints exist - self closing fire doors exist (NFPA 80) - electrical wiring and equipment meet NFPA 70 requirements - storage in the rooms meet the requirements in Appendix 2-3 - either a gravity or a mechanical exhaust ventilation system exists - the exhaust system provides for six changes of air in the room per hour - mechanical exhaust systems are controlled by a switch outside the door and have exhaust outlets on exterior walls - for gravity ventilation, the fresh air intake is on exterior walls - there is one clear aisle at least 91 cm, or 3 feet (ft) wide - containers over 114 L, or over 30-gal, capacity are not stacked one upon the other - dispensing is done by an approved pump or self closing faucet.
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-21. The storage of flammable or combustible liquids in warehouses or storage buildings must meet specific requirements (OEBGD, Chapter 5, Criteria 1 and DOD Directive 4145.19-R-1, para 5-404d).	Verify that the following requirements are met: (6)(7) - if the storage building is located 15 meters (m) (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 2-4 are met - containers are separated by pallets or dunnage when necessary to provide stability and prevent excess stress on container walls - portable tanks stored over one tier high are designed to nest securely - no pile is closer than 91 cm (3 ft) to the nearest beam, chord, girder, or other obstruction - piles are 91 cm (3 ft) below sprinkler deflectors or discharge points of water spray - aisles are at least 91 cm (3 ft) wide when necessary for access to doors, windows, or standpipe connections.
...	...
2-22. Flammable/combustible materials stored outside must meet certain storage and handling criteria (OEBGD, Chapter 5, Criteria 1 and DOD Directive 4145.19-R-1, paras 5-404e and 5-404f).	Examine flammable/combustible outdoor storage area for the following: (1)(6)(7) - no more than 44180 L (1100 gal) of flammable/combustible liquids are stored adjacent to buildings located on the same premises unless 3 m (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 - drains terminate in a safe location - the storage area is protected against tampering.
...	...
2-23. Areas where flammable/combustible materials are stored must meet certain fire protection standards (OEBGD, Chapter 5, Criteria 1 and DOD Directive 4145.19-R-1, para 5-404g).	Examine flammable/combustible storage locations for the following: (6)(7) - at least one 12-B (or higher) rated portable fire extinguisher is located outside the door of any room used for storage and within 3 m (10 ft) of the door opening - at least one 12-B (or higher) rated portable fire extinguisher is located within 3 to 7 m (10 to 25 ft) of any Class I or Class II liquid storage area outside of a storage room, but inside a building.
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Industrial Areas	(NOTE: Items 2-24 through 2-26 pertain to industrial areas where the use of flammable/combustible liquid is incidental to the principal business or where flammable or combustible liquids are handled or used only in unit physical operations which do not involve chemical reactions.)

2-24. Areas where flammable/combustible materials are stored, dispensed, or used in industrial plants should meet specific guidelines (GMP).	Verify that the following provisions are met: (6)(7)
	- portable fire extinguishers and fire control equipment are in place in quantity and type as needed for the hazards of operation and storage at the site
	- adequate precautions are taken to prevent sources of ignition at the site
	- Class I liquids are not dispensed into containers unless nozzles and containers are electrically interconnected
	- operations such as welding and cutting for repairs to equipment are done under the supervision of an individual in charge
	- maintenance and operating practices control leakage and prevent the accidental escape of flammable or combustible liquids:
	  - adequate aisles are maintained
	  - combustible waste materials and residues are kept to a minimum, stored in covered metal containers, and disposed of daily
	  - the grounds area around the buildings and unit operating areas are 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 7 m (25 ft) for Class I liquids and 4 m (15 ft) for Class II and III liquids.

...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

2-25. Incidental storage of flammable/combustible liquids in industrial areas should conform to certain requirements (GMP).	Verify that flammable and combustible liquids are stored in closed containers. (6)(7)
	
	Verify that the storage areas meet the requirements outlined in checklist items 2-21 and 2-22 except that: (6)(7)
	
	- the quantity of liquid that can be located outside of an inside storage room or storage cabinet in a building or in anyone fire area of a building shall not exceed:
	  - 95 L (25 gal) of Class IA liquids in containers
	  - 456 L (120 gal) of Class IB, IC, II, or III liquids in containers
	  - 2508 L (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 with fire resistance. (6)(7)
	
	Verify that drainage or other means is provided to contain spills and adequate natural or mechanical ventilation is present. (6)(7)
	
	Verify that the following practices are done at the point of final use: (6)(7)
	
	- flammable liquids are kept in covered containers when not actually in use
	- means are provided to dispose promptly and safely spills and leaks where flammable/combustible liquids are used or handled
	- 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. (NOTE: Transferring by means of air pressure on the container or portable tanks is prohibited.)

...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-26. Those areas where flammable/combustible liquids are used in unit operations such as mixing, drying, evaporating, filtering, or distillation should meet specific operating standards (GMP).	Verify that the the following parameters are met: (6)(7) - 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 are separated from the remainder of the area by a fire wall of 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 cubic foot per minute per square foot (cu ft/min/sq ft) of solid floor area through either natural or mechanical means - equipment is designed to limit flammable vapor-air mixtures.
...	...
BULK STORAGE	
Compressed Gases	
2-27. Bulk storage of compressed gases in roofed, open-sided sheds must meet certain criteria (OEBGD, Chapter 5, Criteria 1 and DOD 4145.19-R-1, para 5-405d(1)).	Examine the compressed gases storage areas for the following: (1)(6)(7) - shed is on concrete slab above grade - shed is located in secured area - shed is separated from other buildings by at least 15 m (50 ft) - flammable gases and gases that support combustion are stored in separate sheds with at least 15 m (50 ft) between sheds - if shed has one or more sides, provisions are made to ensure complete change of air at least six times per hour - shed is not heated - if necessary, stationary or rotating roof vents are used to lower temperature near ceiling to ambient conditions during warm weather - cylinders and portable tanks have pressure relief devices installed.
...	...
2-28. Bulk storage of compressed gases in enclosed storage facilities must meet certain criteria (OEBGD, Chapter 5, Criteria 1 and DOD 4145.19-R-1, para 5-405d(2)).	Examine the compressed gases storage areas for the following: (1)(3)(6) - building is one story in height, preferably of noncombustible construction - separate storage compartments or rooms are available for flammable gases or gases that support combustion - at least one wall of each storage room or compartment for combustible gases is an exterior wall - every storage room or compartment is provided with either a gravity or a mechanical exhaust ventilation system designed to provide complete change of air at least six times per hour - building is not heated - cylinders and portable tanks have pressure relief devices installed.

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-29. Compressed gases are required to be handled according to specific procedures and practices (OEBGD, Chapter 5, Criteria 1 and DOD Directive 4145.19-R-1, para 5-405c(6) through 5-405c (9), para 5-405c(14), and para 5-405c(22)).	Verify that the following practices and procedures are followed: (1)(3)(6) - 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.
...	...
Acids	

2-30. Bulk storage of acids must meet certain storage and handling criteria (OEBGD, Chapter 5, Criteria 1 and DOD 4145.19-R-1, para 5-406).	Examine the bulk acid storage areas for the following: (1)(6)(7)
	- building is one story in height, preferably of nonflammable construction
	- permanent louvered openings at floor and ceiling levels or other gravity ventilation method is provided
	- safety equipment is available and operating (eye wash, deluge shower, self-contained breathing apparatus, protective clothing)
	- building is heated (if applicable) to prevent freezing
	- different acids are stored in separate spaces or noncombustible sealed barriers at least 91 cm (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.

...	...
TRANSPORTATION OF HAZARDOUS MATERIALS	
2-31. Hazardous materials shipments are required to meet specific standards (OEBGD, Chapter 5, Criteria 3).	Verify that the shipment is accompanied by shipping papers that clearly describe the quantity and identity of the material includes an MSDS. (6) Verify that, as needed, materials are labeled as "ignitable," "corrosive," "reactive," or "toxic." (6) Verify that supervisory personnel do a walk-around inspection of the vehicles before and after the material is loaded. (6) Verify that the label on the container is compatible with the classification on shipping papers. (6) Verify that all drivers are briefed on the hazardous material in the shipment, including the health risks of exposure and the physical hazards of the material. (6)

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
2-32. The installation should provide proper placarding to vehicles transporting hazardous materials off the installation (GMP).	Determine if Army vehicles are used in transporting hazardous materials off the installation. (6) Verify that they have proper placards affixed to vehicles. (6) Verify that commercial vehicles used for transportation of hazardous materials have proper placards provided by the DOL. (6) Identify proper placarding procedures of vehicles used to transport hazardous materials, if practical. (6)
...	...
2-33. Installation transportation of hazardous materials between buildings should be accomplished with GMPs to ensure against spills, releases, and accidents (GMP).	Determine if procedures exist to manage movement of hazardous materials throughout the installation. (6)(9) Verify that drivers are trained in spill control procedures. (9) Verify that provisions have been made for securing hazardous materials in vehicles when transporting. (9)
...	...
2-34. International air shipments of hazardous materials originating from a DOD installation are required to meet specific standards (OEBGD, Chapter 5, Criteria 4).	Determine if the installation ships hazardous materials internationally by air. (6)(9) Verify that the following shipping standards are met: (6)(9) - the International Civil Air Organization Rules - Air Force Regulation (AFR) 71-4 - Technical Manual (TM) 36-250 - Naval Supply Systems Command (NAVSUP) 505 - MCO P4030.19E - DLAM 4145.3.
...	...

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COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
OFF-SITE CONTAMINATION	
2-35. The Army is required to conduct response actions outside of installation boundaries where the installation is reasonably considered the sole or the major source of the release (AR 200-1, para 9-8).	Check to see if data indicates contamination is migrating from a source on Army-controlled property to outside the installation boundaries. (2) Verify that a process is in place to notify the following: (1) - the MACOM environmental, legal, and public affairs staffs - local authorities. Verify that off-site response plans are coordinated with host nation and local authorities, and have been authorized by Department of the Army Security Agency (DASA) (ESOH). (1) Verify that the installation seeks to minimize future commitments and liabilities. (1)
...	...
RELEASES	
2-36. Any spill of a hazardous substance that exceeds the reportable quantities must be reported to the Installation On-Site Commander (IOSC), host nation authorities, and local fire departments immediately, and action must be implemented to eliminate the source and contain the spill (OEBGD, Chapter 18, Criteria 5(b) and 5(e); AR 200-1, para 8-3(a)).	Verify that spills of reportable *quantities of hazardous substances* have been reported to the IOSC and other appropriate individuals (See Appendix 3-1 in the section *Hazardous Wastes Management* for Reportable Quantities). (1)(2)
...	...
2-37. When a spill of a hazardous substance occurs inside the installation and is migrating off the installation or threatening the local host nation drinking water resource, the appropriate authorities must be notified immediately (OEBGD, Chapter 18, Criteria 5(d)).	Determine if there have been any spills of hazardous substances that have migrated off the installation. (1)(2) Verify that appropriate Military Department, Executive Agent, and host nation authorities were notified. (1)(2)

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Appendix 2-1

Typical Hazardous Materials Characteristics

I.	The item is a health or physical hazard. Health hazards include carcinogens, corrosive materials, irritants, sensitizers, toxic materials, and materials that damage the skin, eyes, or internal organs. Physical hazards include combustible liquids, compressed gases, explosives, flammable materials, organic peroxides, oxidizers, pyrophoric materials, unstable (reactive) materials, and water-reactive materials.
II.	The item and/or its disposal is regulated by the host nation because of its hazardous nature.
III.	The item contains asbestos, mercury, or polychlorinated biphenyls.
IV.	The item has a flashpoint below 93 ^{o}C (200 ^{o}F) closed cup, or is subject to spontaneous heating or is subject to polymerization with release of large amounts of energy when handled, stored, or shipped without adequate control.
V.	The item is a flammable solid or is an oxidizer or is a strong oxidizing or reducing agent with a standard reduction potential of greater than 1.0 volt (v) or less than -1.0 v.
VI.	In the course of normal operations, accidents, leaks, or spills, the item may produce dusts, gases, fumes, vapors, mists, or smokes with on or more of the above characteristics.
VII.	The item has special characteristics that, in the opinion of the manufacturer or the DOD Components, could cause harm to personnel if used or stored improperly.

Appendix 2-2

Maximum Allowable Capacity of Containers And Portable Tanks for Hazardous Materials

Container Type	Flammable Liquids			Combustible Liquids	
	IA	*IB*	*IC*	*II*	*II*
Glass or approved plastic[1]	1 pt[2]	1 qt[2]	1[3]	1	1
Metal (other than DOT drums)	1	5	5	5	5
Safety cans	2	5	5	5	5
Metal drums (DOT specifications)	60	60	60	60	60
Approved portable tanks	660	660	660	660	660

[1] Nearest metric size is also acceptable for the glass and plastic containers listed.
[2] One gallon of nearest metric equivalent size may be used if metal containers must be avoided because of chemical reaction with their contents.
[3] Quantities are in gallons for the rest of this table.

Appendix 2-3

Storage of Hazardous Materials in Inside Rooms

Fire Protection[1] *Provided*	*Fire Resistance*	*Maximum Size*	*Total Allowable Quantities*[2] *(gal/sq ft floor area)*
Yes	2h	500 sq ft	10
No	2h	500 sq ft	4
Yes	1h	150 sq ft	5
No	1h	150 sq ft	2

[1] Fire protection system will be sprinkler, water spray, or other approved method.
[2] If metric containers are being stored, use the nearest metric equivalent.

Appendix 2-4

Indoor/Outdoor Storage For Flammable/Combustible Materials

Flammable/Combustible Materials
Indoor Container Storage

Class Liquid	Storage Level	*Protected Storage Maximum per Pile in Gallons	Unprotected Storage Maximum per Pile in Gallons
IA	Ground and upper floors	2,750 (50)	600 (12)
	Basement	Not permitted	Not permitted
IB	Ground and upper floors	5,500 (100)	1,375 (25)
	Basement	Not permitted	Not permitted
IC	Ground and upper floors	16,500 (300)	4,125 (25)
	Basement	Not permitted	Not permitted
II	Ground and upper floors	16,500 (300)	4,125 (75)
	Basement	5,500 (100)	Not permitted
III	Ground and upper floors	55,000 (1,000)	13,750 (250)
	Basement	8,250 (450)	Not permitted

* A sprinkler or equivalent fire protection system installed in accordance with NFPA Standard 30.

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 no container is more than 4 m (12 ft) from an aisle. Main aisles will be at least 2 m (8 ft) wide and side aisles at least 1 m (4 ft) wide. (Numbers in parentheses indicate the number of 55-gal drums.)

NOTE 3: Each pile shall be separated from each other by at least 1 m (4 ft).

Appendix 2-4
(continued)

Flammable/Combustible Materials
Outdoor Container Storage

Class Liquid	Maximum per pile (see NOTE 1)	Distance between piles (see NOTE 2)	Distance to property line that can be built upon (see NOTES 3 and 1)	Distance to street, alley public way (see NOTE 4)
	(gal)	(ft)	(ft)	(ft)
IA	1,100	5	20	10
IB	2,200	5	20	10
IC	4,400	5	20	10
II	8,800	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 access 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 to less than 3 ft.

Appendix 2-4
(continued)

Flammable/Combustible Materials
Indoor Portable Tank Storage

Class Liquid	Storage Level	*Protected Storage Maximum per Pile Gallons	Unprotected Storage Maximum per Pile Gallons
IA	Ground and upper floors	Not permitted	Not permitted
	Basement	Not permitted	Not permitted
IB	Ground and upper floors	20,000	2,000
	Basement	Not permitted	Not permitted
IC	Ground and upper floors	40,000	5,500
	Basement	Not permitted	Not permitted
II	Ground and upper floors	40,000	5,500
	Basement	20,000	Not permitted
III	Ground and upper floors	60,000	22,000
	Basement	20,000	Not permitted

* A sprinkler or equivalent fire protection system installed in accordance with NFPA Standard 30.

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 no container is more than 12 ft from an aisle. Main aisles will be at least 8 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.

Appendix 2-4
(continued)

Flammable/Combustible Materials
Outdoor Portable Tank Storage

Class Liquid	Maximum per pile (see NOTE 1)	Distance between piles (see NOTE 2)	Distance to property line that can be built upon (see NOTES 3 and 4)	Distance to street, alley public way (see NOTE 4)
	(gal)	(ft)	(ft)	(ft)
IA	2,200	5	20	10
IB	4,400	5	20	10
IC	8,800	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 access 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 to less than 3 ft.

INSTALLATION:	COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Worldwide ECAS	DATE:	REVIEWER(S):

STATUS NA C RMA	REVIEWER COMMENTS:

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer (6) Director of Logistics (DOL) (7) Fuels Management Officer (DOL/DEH) (8) Transportation/Maintenance Officer (DOL) (9) Chief Operations and Maintenance (O&M)

Section 3

Hazardous Waste Management

SECTION 3

HAZARDOUS WASTE MANAGEMENT

A. Applicability of this Protocol

This protocol applies to military communities that generate, store, treat, or dispose of any type of hazardous waste.

The Federal regulations that control the storage, handling, and treatment of hazardous waste have not been implemented on an Outside Continental United States (OCONUS)-wide basis. Individual Major Army Commands (MACOMs) have implemented portions of these regulations. This protocol summarizes many of the Federal hazardous waste regulations as good management practices (GMPs). But, if a particular MACOM has implemented policy adopting specific U.S. hazardous waste regulations, the evaluator should consult the most recent United States ECAS manual for an accurate assessment of compliance.

This protocol and its associated evaluation worksheets are necessarily more complex than other protocols in this volume. All evaluation items will not be applicable to all military communities. Guidance is provided to the evaluator on the worksheets to direct him/her to the evaluation questions related to the type of hazardous waste activities/facilities on the military community.

B. DOD Regulations

- *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992, Chapter 6 addresses the management of hazardous waste. It includes criteria for the identification, accumulation, storage, transportation, and disposal of hazardous waste.

- Department of Defense (DOD) 4160.21M gives guidance on waste turn-in for disposal at the Defense and Reutilization Marketing Office (DRMO).

C. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990 provides for the creation of a hazardous waste management plan and associated documentation. It also requires OCONUS commanders to respect host nation substantive standards and necessary procedural requirements and comply with Department of the Army (DA) waste minimization efforts.

D. Responsibility for Compliance

- The Installation Commander (IC) is responsible for establishing and maintaining an active surveillance program of: users, generators, transporters, and storers of hazardous wastes; the waste minimization program; and disposal activities. Operational responsibility for the hazardous waste program rests with the activities that generate, treat, store, transport, or dispose of the waste and the activities responsible for implementing health, safety, and environmental protection programs.

- The Directorate of Engineering and Housing (DEH) and Directorate of Safety and Health (DSH) will serve as the IC's expert representatives for the management of all wastes, unless otherwise directed by the IC.

  In the area of compliance, the DEH/DSH will immediately: advise the IC on the receipt of enforcement notices, such as Notices of Violations (NOVs), consent orders, or compliance agreements; advise all waste generating activities on host nation and oversee Army requirements for managing hazardous waste, including requirements for permits, reporting, and recordkeeping; prepare all required reports on hazardous waste; monitor installation compliance with host nation hazardous waste requirements, including activities of tenants and subinstallations; and prepare and monitor compliance with the hazardous waste management plan that establishes procedures and responsibilities for managing hazardous wastes.

  In the area of waste management (including disposal), the DEH/DSH will: advise the IC, in coordination with generating activities, on the most cost-effective and efficient means of waste storage, treatment, and disposal; provide technical assistance and guidance to hazardous waste generating activities, tenants, and operators of Resource Conservation and Recovery Act (RCRA) hazardous waste Treatment, Storage, and Disposal Facilities (TSDFs); provide for analysis of waste to determine if it is hazardous under applicable laws; ensure hazardous wastes are properly identified, segregated, and weighed before treatment, storage, disposal, or transportation; certify that wastes are hazardous wastes and provide copies of waste analysis before arranging for off-post transportation; coordinate an annual installation-wide inventory of all hazardous waste and identify the waste generating activities; and establish, monitor, and execute programs in waste management, including waste minimization, resource recovery, and recycling.

- The Director of Logistics (DOL) - will monitor installation-wide use of hazardous materials to ensure progress in meeting Army hazardous waste minimization goals and requirements, and provide quarterly progress reports to the DEH.

On a semi-annual basis, the DOL will recommend opportunities and provide a progress report to the IC in reducing the use and toxicity of hazardous materials, following the concurrence of the DEH.

Additionally, the DOL will: arrange for and monitor all on-post and off-post shipments of hazardous waste, ensuring compliance with applicable laws and requirements; prepare and maintain records on transporting hazardous wastes, including manifests, and records maintained by the DRMO where colocated on an Army installation; sign the hazardous waste manifest as the IC's designee; coordinate with the DEH to obtain certification that wastes meet the definition of hazardous wastes before offering off-post transportation; advise waste generating activities on proper requirements for packaging, labelling, and shipping of solid waste and hazardous waste to enable the DOL to ensure that off-post transportation of these wastes conforms with Federal, state, Army, DOD, and host nation requirements; actively support the DEH in measuring progress to meet Federal and Army waste reduction goals and requirements; and communicate regularly with the Defense Logistics Agency (DLA) activity serving the installation to maintain current information on markets for hazardous wastes.

- Commanders of medical department activities (MEDDACs) and U.S. Army Medical Centers (MEDCENs) - will provide the IC or IC's designee with the hazardous waste management implications of new and revised MEDDAC/MEDCEN practices for review and concurrence and prepare and maintain a management plan for the disposal of medical waste.

- Installation preventive medicine services (PVNTMED) - personnel will support the hazardous waste management programs, provide technical assistance in identifying wastes and inventorying sources of hazardous wastes, and represent the MEDDAC/MEDCEN as an installation tenant and hazardous waste generator.

- Installation safety officers - will oversee the storage, packaging, transportation, treatment, and disposal of waste, and monitor personnel training requirements to ensure compliance with Army safety standards.

- The Chief of the installation public affairs office (PAO) - will: establish the necessary supporting public affairs program; coordinate and conduct public involvement to obtain a permit and permit modifications, including an Environmental Assessment (EA) or Environmental Impact Statement (EIS); and assist the commander in preparing for any public hearings or public meetings.

- Tenants (Federal and non-Federal), such as the DRMO, on Army properties or where the Army is a tenant on non-Army property will comply equally with all laws and requirements.

- Managers of government-owned contractor-operated (GOCO) facilities that produce hazardous waste on Army installations will: apportion fees to support the treatment, storage, and disposal of hazardous wastes; establish administrative requirements to preclude the Federal Government from incurring liability associated with treatment, storage, or disposal of hazardous wastes; prohibit the use of DOD personnel in handling solid and hazardous wastes; comply with host nation laws and regulations and Army policies on reducing the volume, quantity, or toxicity of hazardous waste; prohibit the use of on-site hazardous waste treatment, storage, and disposal facilities for non-DOD owned hazardous wastes generated off-site; and pay fines assessed by host nation regulatory agencies for noncompliance (the Army cannot reimburse for such fines).

- Hazardous waste generators will properly identify, label, package, treat, store, dispose of, measure, transport on-post, or offer for transport off-post, hazardous wastes per requirements of the MACOM, substantive host nation requirements, and the installation hazardous waste management plan (IHWP). Also, generators will: ensure that all hazardous wastes generated during operations are certified by the DEH and tracked to minimize the potential for worker exposure, spills, or mixture with nonhazardous wastes; maintain accountability for and document the flow of hazardous materials from the point of receipt to point of turn-in for disposal; minimize waste generation wherever possible and feasible; provide the DEH with the information necessary to prepare reports per the hazardous waste management plan; and maintain an accurate inventory of hazardous waste that reflects changes in operation.

- Hazardous waste treatment, storage, and disposal facility (TSDF) operators are responsible for ensuring compliance with hazardous waste regulations and permit standards applicable to the facility, including maintaining operational and training records.

- The Defense Reutilization and Marketing Service (DRMS) is an agency that may or may not be located on the installation. Regardless, it is the single agency designated by DOD to provide hazardous waste disposal service to the installation on a pay-for-services-rendered basis. The DRMS is responsible for compliance with all substantive host nation and Army (including installation guidance) regulations at its storage/disposal facility.

E. Key Compliance Definitions

These definitions were obtained from the directives/instructions and ARs listed at the end of each definition. If there is no citation listed for the definition, it has been drawn from the U.S. Code of Federal Regulations (CFR).

- *Aboveground Tank* - a tank 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.

- *Active Portion* - that portion of a facility where treatment, storage, or disposal operations are being or have been conducted and which is not a "closed portion."

- *Acute Hazardous Waste* - those wastes listed in Appendix 3-1 with a United States Environmental Protection Agency (USEPA) waste number with the designator "p" or those wastes with (H) following the waste number (OEBGD, Chapter 6, Definitions).

- *Characteristics of Hazardous Waste* - the characteristics of ignitability, corrosivity, reactivity, and toxicity that identify hazardous waste.

- *Chemical Warfare Agent* - a substance that because of its chemical properties, is used in military operations to kill, seriously injure, or incapacitate humans or animals or to deny use of indigenous resources (AR 200-1, Glossary).

- *Closed Portion* - the portion of a facility that has been closed in accordance with the approved closure plan and all applicable closure requirements.

- *Component* - either the tank or the ancillary equipment of the tank system.

- *Container* - any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled.

- *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 that could threaten human health or the environment.

- *Dike* - an embankment or ridge of either natural or man-made materials used to prevent the movement of liquids, sludges, solids, or other materials.

- *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.

- *Disposal* - discharging, depositing, injecting, dumping, spilling, leaking, or placing any hazardous waste into or on any land or water so that such hazardous waste or any constituent thereof may enter the environment or be emitted into the air, or be discharged into any waters, including groundwaters (OEBGD, Chapter 6, Definitions).

- *DOD Hazardous Waste Generator* - an installation or activity on an installation that produces a regulated hazardous waste (OEBGD, Chapter 6, Definitions).

- *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).

- *Free Liquids* - liquids that readily separate from the solid portion of a waste under ambient temperature and pressure.

- *Good Management Practice (GMP)* - schedules of activities, prohibitions of practices, maintenance procedures, and other management procedures to prevent or reduce hazards to the environment.

- *Hazardous Constituent* - a chemical compound that is listed by name in Appendix 3-1 or possesses a characteristic described in Appendix 3-1 (OEBGD, Chapter 6, Definitions).

- *Hazardous Waste* - a discarded material that may be solid, semisolid, liquid, or contained gas and either exhibits a characteristic of a hazardous waste in Appendix 3-1 or is listed as a hazardous waste in Appendix 3-1 (OEBGD, Chapter 6, Definitions).

- *Hazardous Waste Accumulation Point* - an area at or near the point of generation where up to 206 liters (L), or 55 gallons (gal) of hazardous waste or up to 1 L, or 1 quart (qt), of acute hazardous waste are temporarily stored, from each waste stream, until removed to a hazardous waste storage area (HWSA) or shipped for treatment or disposal (OEBGD, Chapter 6, Definitions).

- *Hazardous Waste Fuel* - hazardous waste burned for energy recovery is termed "hazardous waste fuel." Fuel produced from hazardous waste by processing, blending, or other treatment is also hazardous waste fuel (OEBGD, Chapter 6, Definitions).

- *Hazardous Waste Generation* - any act or process that produces hazardous waste as defined in this document (OEBGD, Chapter 6, Definitions).

- *Hazardous Waste Profile Sheet* - a document that identifies and characterizes the waste by providing user's knowledge of the waste, and/or lab analysis and details the physical, chemical, and other descriptive properties or processes that created the hazardous waste (OEBGD, Chapter 6, Definitions).

- *Hazardous Waste Storage Area (HWSA)* - a location where more than 206 L (55 gal) of hazardous waste or 1 L (1 qt) of acute hazardous waste from one waste stream is stored prior to shipment for treatment or disposal (OEBGD, Chapter 6, Definitions).

- *Incinerator* - an enclosed device using controlled flame combustion that neither meets the criteria for classification as a boiler nor is listed as an industrial furnace.

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

- *In-ground Tank* - a tank whereby a portion of the tank is situated to any degree within the ground, thereby preventing visual inspection of the external surface area of the tank that is in the ground.

- *Inner Liner* - a continuous layer of material placed inside a tank or container that protects the construction materials of the tank or container from the contained waste or reagents used to treat the waste.

- *Land Disposal* - placement in or on the land, including, but not limited to, land treatment, surface impoundments, underground injection wells, salt dome formations, salt bed formations, underground mines, or caves (OEBGD, Chapter 6, Definitions).

- *Leachate* - any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous waste.

- *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., daily visible containment for releases into the secondary containment system of aboveground tanks) or

consist of an interstitial monitoring devise designed to continuously and automatically detect the failure of the primary or secondary containment structure or the presence of hazardous waste released into the secondary containment structure.

- *Liner* - a continuous layer of natural or man-made materials, beneath or on the sides of a surface impoundment, landfill, or landfill cell, that restricts the downward or lateral escape of hazardous waste, hazardous waste constituents, or leachate.

- *On-Ground Tank* - a tank 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.

- *On-Site* - the same, or geographically continuous property that may be divided by a public right-of-way, provided the entrance and exit between the properties is at a cross-roads intersection and access is by crossing as opposed to going along the right-of-way.

- *Representative Sample* - a sample of a universe or whole (e.g., waste pile, lagoon, groundwater) that can be expected to exhibit the average properties of the universe or whole.

- *Run-off* - any rainwater, leachate, or other liquid that drains over land from any part of a facility.

- *Run-on* - any rainwater, leachate, or other liquid that drains over land onto any part of a facility.

- *Sludge* - any solid, semisolid, 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.

- *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.

- *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 storage, treatment, or disposal facilities. Except when used in rules for landfills, surface impoundments, and waste piles, "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.

- *Surface Impoundment* - a facility or part of a facility that is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials designed to hold an accumulation of liquid wastes or wastes containing free liquids and that is not an injection well.

- *Tank* - a stationary device designed to contain an accumulation of hazardous waste that and constructed primarily of nonearthen materials (e.g., wood, concrete, steel, plastic) that provide structural support.

- *Tank System* - a hazardous waste storage or treatment tank and its associated ancillary equipment and containment system.

- *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, recover energy or material resources from the waste, or 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 (OEBGD, Chapter 6, Definitions).

- *Treatment, Storage, and Disposal Facility (TSDF)* - refers to any facility not located on a DOD installation that is used for the collection, source separation, storage, transportation, transfer, processing, treatment, or disposal of hazardous waste (OEBGD, Chapter 6, Definitions).

- *Treatment Zone* - a soil area of the unsaturated zone of a land treatment unit within which hazardous constituents are degraded, transformed, or immobilized.

- *Underground Tank* - a tank whose entire surface area is totally below the surface and covered by the ground.

- *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.

- *Unsaturated Zone or Zone of Aeration* - the zone between the land surface and the water table.

- *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.

HAZARDOUS WASTE MANAGEMENT

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS: (a)
All installations	3-1 through 3-14	(1)(2)(4)(6)(18)(23)
Training	3-15 and 3-16	(2)(6)(18)(19)(23)
Transportation of hazardous waste	3-17 through 3-19	(1)(6)(19)
Generators of hazardous waste	3-20 through 3-22	(1)(2)(19)
Hazardous waste accumulation points	3-23 through 3-28	(1)(2)(19)
Hazardous waste treatment/storage/ disposal facilities	3-29 through 3-38	(2)(5)(18)(19)(23)
HWSAs		
Containers	3-39 through 3-43	(2)(18)(19)(23)
Tank systems	3-44 through 3-52	(1)(2)(6)(18)(19)(23)
Documentation	3-53 through 3-55	(1)(2)(18)(23)
Disposal	3-56 through 3-60	(1)(4)(18)
Land disposal	3-61	(18)
Incinerators	3-62	(18)
Treatment technologies	3-63 and 3-64	(1)(2)(4)
Specific wastes	3-65	(2)(4)

(a)CONTACT/LOCATION CODE:

(1) Directorate of Engineering and Housing (DEH)
(2) Environmental Coordinator (EC)
(4) Safety and Health Officer
(5) Fire Department
(6) Director of Logistics (DOL)
(7) Fuels Management Officer
(18) TSDF Operators (DEH, DOL, DRMO)
(19) Shop Activity Supervisor
(23) Defense and Reutilization Marketing Office (DRMO)

Records to Review

Generator (including TSDFs if they are also generators):

- Hazardous waste manifests
- Manifest exception reports
- Biennial reports (large quantity generators only)
- Delistings
- Speculative accumulation records
- Land disposal restriction certifications
- Employee training documentation
- Hazardous waste tank integrity assessments
- Contingency plan (large quantity generators only)
- Notifications of hazardous waste oil fuel marketing or blending activity
- Accumulation point inspection records
- Hazardous Waste Management Plan
- Used Solvent Elimination Program Contract (DEH or DOL)

In addition to the above, TSDFs would require:

- Location map of TSDFs
- Unmanifested waste reports
- Facility audit reports (inspection log)
- Waste analysis plan(s)
- Operating record
- Groundwater monitoring records and annual reports (where required)
- Facility biennial reports
- Closure/post closure notices (where applicable)
- Other documents as required by the permit
- Hazardous waste inventory

Physical Features to Inspect

- Disposal sites
- Accumulations points
- Incinerators
- Vehicles used for transport
- Storage facilities (including drums)
- Surface impoundments

People to Interview

- Directorate of Engineering and Housing (DEH)
- Environmental Coordinator (EC)
- Safety and Health Officer
- Fire Department
- Director of Logistics (DOL)
- Fuels Management Officer
- TSDF Operators (DEH, DOL, DRMO)
- Shop Activity Supervisor
- Defense and Reutilization Marketing Office (DRMO)

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL INSTALLATIONS	
3-1. Determine actions or changes since previous review of hazardous waste management (GMP).	Obtain copy of previous hazardous waste review and determine if non-compliance issues have been resolved. (1)(2)
...	...
3-2. Copies of all relevant DOD directives/ instructions, ARs, and guidance documents on hazardous waste should be maintained at the installation (GMP).	Determine from interview if copies of the following regulations are maintained and kept current at the installation: (1)(2) - *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992. - NFPA, *Fire Protection Guide of Hazardous Materials.* - DEQPPM 80-5, *DOD Hazardous Materials Disposal Policy.* - DEQPPM 80-8, *RCRA Hazardous Waste Management Regulations.* - AR 200-1, *Environmental Protection and Enhancement.* - Policy Letters. Determine if installation environmental staff are familiar with and knowledgeable about regulatory requirements. (1)(2)(4)
...	...
3-3. Installations are required to comply with MACOM regulations and substantive applicable host nation regulations concerning hazardous waste (AR 200-1, para 1-40).	Verify that the installation is complying with MACOM and host nation requirements. (1) (NOTE: Examples of areas possibly regulated by the MACOM or host nation agencies include: - manifesting requirements - reporting requirements - transportation - identification of special waste or waste categories - regulation of specific substances as hazardous waste such as: medical, pathological, and infectious wastes; used oil; explosives; and used batteries - small quantity generator requirements - disposal requirements - construction and operation of storage and disposal facilities - classification/characteristics of hazardous waste - storage and marking of hazardous waste.)
...	...

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (4) Safety and Health Officer (5) Fire Department (6) Director of Logistics (DOL) (7) Fuels Management Officer (18) TSDF Operators (DEH,DOL,DRMO) (19) Shop Activity Supervisor (23) Defense and Reutilization Marketing Office (DRMO)

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-4. Each installation must have a written hazardous waste management plan (AR 200-1, para 6-4b).	Verify that the DEH has prepared a hazardous waste management plan and provided copies to all facility personnel that generate, transport, treat, store, and dispose of hazardous waste. (1) Verify that the plan is signed by the IC and includes the following: (1) - responsibilities of installation organizations and personnel - types and quantities of hazardous waste for each hazardous waste generating activity, including tenants - description of waste minimization projects - locations of all hazardous waste storage, treatment, and disposal units - description of installation procedures to treat, store, dispose of, transport on-post, or offer for transport off-post, hazardous waste - procedures to analyze hazardous waste - inspection procedures - procedures for the prevention of unauthorized entry into the hazardous waste units - description of training programs - contingency plan measures - procedures to temporarily treat, store, and dispose of hazardous waste if the use of existing facilities is unavailable - copies of any permits - location of the *Spill Prevention, Control, and Countermeasures* (SPCC) Plan and the Installation Spill Contingency Plan (ISCP).
...	...
3-5. Each installation must conduct an annual inventory of hazardous waste (AR 200-1, para 6-4c).	Verify that the DEH has conducted an annual inventory of hazardous wastes, that it is certified by the IC, and that it includes: (1) - the hazardous waste generators - names and addresses of off-site TSDFs receiving the installation's hazardous waste - the name of each transporter used for off-site shipments of hazardous waste - description and quantity of each hazardous waste shipped off-site - the USEPA identification number, if applicable, of the off-site facility to which the waste was shipped - a description of efforts undertaken during the year to reduce the volume and toxicity of wastes generated - a description of the changes in volume and toxicity of waste actually achieved in comparison to previous years, beginning with 1985.
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
3-6. Army material resources must be procured and used in a way that minimizes waste production (AR 200-1, para 1-27a and 6-6).	Verify that the DOL monitors installation-wide use of hazardous materials to ensure progress in meeting Hazardous Waste Minimization (HAZMIN) goals and provides quarterly progress reports to the DEH. (6) Verify that the DOL conducts surveys of the installation to identify opportunities for HAZMIN and land-disposal reductions. (6) Verify that the DOL provides semiannual progress reports to the IC on the reduction of use and toxicity of hazardous materials, recommending opportunities for further reduction. (6)
...	...
3-7. Installations are required to report HAZMIN efforts (AR 200-1 para 6-6c(1)).	Verify that the report includes a description of efforts undertaken during the year to reduce the volume and toxicity of hazardous waste generated, and a description of the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years. (1)(6)
...	...
3-8. Hazardous waste must be recycled or reused to the maximum extent possible (OEBGD, Chapter 6, Section 11, Criteria 6).	Verify that safe and environmentally acceptable methods are used to identify, store, prevent leakage of, and dispose of hazardous wastes in order to minimize risks to health and the environment. (1)(6)
...	...
3-9. Munitions and ordinance that have been designated as waste is required to be handled according to RCRA hazardous waste management requirements. (AR 200-1, para 6-7e).	Verify that if an installation has explosive ordinance that do become waste, the installation proactively adheres to AR 200-1 and appropriate host nation requirements. (1)
...	...
3-10. Chemical warfare agents destined for disposal must be managed as hazardous waste, if applicable (AR 200-1, para 6-9a).	Verify that if the installation does have chemical warfare agents destined for disposal, they are treated as hazardous waste under RCRA. (1) Verify that the installation commander reports through command channels to Headquarters, Department of the Army (HQDA), (DALO-SMZ), on the handling, use, inventory, or disposal of chemical warfare agents. Commanders must report on chemical accidents and incidents as required. (1)(18)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-11. Hazardous waste may not be used for dust suppression or road treatment (OEBGD, Chapter 6, Section 9, Criteria 2).	Verify that hazardous waste is not used for dust suppression or road work. (1)
...	...
3-12. Disposal of medical, dental, and veterinary supplies and wastes must meed specific requirements (AR 200-1, para 6-11).	Verify that medical, dental and veterinary supplies and wastes that are RCRA listed or characteristic wastes are managed through the DRMO or a commercial contract with a permitted disposal firm. (1)(23) Verify that if the generator does not posses the technical capability or facilities to dispose of items, according to the the U.S. Army Environmental Hygiene Agency method of destruction for such wastes that are not RCRA listed but should be treated as a RCRA hazardous waste, the DRMO should be contacted for disposal. (1)(23) Verify that installation commanders disposing of such medical, dental, and veterinary wastes by land burial maintain records on: (1)(23) - quantities disposed - disposal method used - disposal site location.
...	...
3-13. Installations that generate solid wastes are required to determine if the wastes are hazardous wastes (OEBGD, Chapter 6, Section 1, Criteria 1 and Section 9, Criteria 3).	Determine how wastes generated on the installation were identified and classified by interviewing the staff. (1) Verify that a Hazardous Waste Profile Sheet is used to identify each hazardous waste. (1) Determine if the installation generates, transports, treats, stores, or disposes of any hazardous waste (see Appendix 3-1 for guidance). (1) (NOTE: Lead acid batteries that are not going to be recycled must be treated as hazardous waste.)
...	...
3-14. Installations that handle or manage wastes should identify those wastes defined as hazardous according to toxicity characteristics (GMP).	Determine if waste fits the hazardous waste toxicity characteristics if: (1)(4) - the waste previously has been identified as toxic (see Appendix 3-2), or - the waste contains contaminants in greater concentrations than the Toxicity Characteristics listed in Appendix 3-3. Verify that all data, including quality assurance data, is maintained and kept available for reference or inspection. (1)(4)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
TRAINING **3-15.** All installation personnel who handle hazardous waste must meet certain training requirements (OEBGD, Chapter 6, Section 10, Criterias 1 through 4). ...	Verify that the training program is directed by a person trained in hazardous waste management procedures. (2)(18)(23) Verify that the following individuals receive training: (2)(18)((23) - those who determine which wastes are hazardous wastes - those who complete hazardous waste recordkeeping requirements - those who handle/store hazardous waste containers - those who transfer hazardous waste to or from accumulation tanks or containers - those who transport hazardous waste - those who perform hazardous waste clean-up (nonemergency) - those who collect hazardous waste samples - those who conduct other hazardous waste related activities as designated by Base Commanders and/or ECs. Verify that the training program includes the following: (2)(6)(18)(19) - key parameters for automatic waste feed cut-off system - procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment - operation of communication and alarm systems - safe use of equipment - duties needed to fulfill job assignments - response to fires or explosions - response to leaks or spills - facility shutdown procedures. Verify that personnel assigned to duties involving actual or potential exposure to hazardous wastes complete new employee training prior to assuming their duties, and work under direct supervision until training is completed. (2)(6)(18)(19) Verify that an annual review of initial training is provided. (2)(18)(19) Verify specifically that accumulation point managers and hazardous waste handlers have been trained. (2)(19) ...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-16. Training records are required to be maintained for all installation staff who manage hazardous waste (OEBGD, Chapter 6, Section 10, Criteria 5).	Verify that documentation and records include the following: (2)(18)(19) - job title and description for each employee by name - written description of how much training each position will receive - documentation of training received by each employee. Determine if training records are retained for 3 yr after employment at the installation. (2)(18)(19)
...	...
TRANSPORTATION OF HAZARDOUS WASTE	
3-17. Transportation of hazardous waste is required to meet specific parameters (OEBGD, Chapter 6, Section 1, Criteria 4(a) and 4(b); AR 200-1, para 6-4g).	Verify that for on-post transportation: (1)(6)(19) - the generating activity is responsible for transportation within the installation - the generating activity documents the date, time, and location of the delivery, quantities, and receiving official's name - no deliveries are made without first notifying and receiving approval from the receiving agency - the DOL inspects routes and vehicles to ensure maximum safety and reduce exposure in the event of an accident - the DOL inspects routes and vehicles to ensure compliance with applicable host nation requirements. Verify that manifests are used when on-post transportation utilizes public roads. (1)(6)(19) Verify that the installation commander, acting through the DOL, is responsible for ensuring that off-post transport complies with applicable host nation regulations, including: (1)(6)(19) - pretransportation requirements for marking, labeling, and packaging - signing the hazardous waste manifest and complying with the manifest system and recordkeeping requirements.
...	...
3-18. The installation should ensure that transportation of hazardous wastes between buildings is accomplished in accordance with GMPs to help prevent spills, releases, and accidents (GMP).	Determine from the transportation branch if procedures exist to manage movement of hazardous wastes throughout the installation. (1) Verify that drivers are trained in spill control procedures. (1) Verify that provisions are made to secure wastes in vehicles during transport. (1)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-19. Transporters should take immediate notification and cleanup action if discharge occurs during transport (GMP).	Verify that transport operators have instructions to notify local authorities and take cleanup action. (1)(6)
...	...
GENERATORS OF HAZARDOUS WASTE	
3-20. Generators are required to use a unique identification number for all recordkeeping, reports, and manifests of hazardous wastes (OEBGD, Chapter 6, Section 1, Criteria 3).	Verify, by reviewing records, that each waste is assigned a unique number. (2)(19)
...	...
3-21. Generators are required to identify inherent hazardous characteristics associated with a waste in terms of physical properties, chemical properties, and/or other descriptive properties (OEBGD, Chapter 6, Section 1, Criteria 2).	Verify that wastes have been identified according to the following: (2)(19) - physical properties (solid, liquid, gaseous) - chemical properties (chemical constituents, technical name) - other descriptive properties (ignitable, corrosive, reactive, toxic).
...	...
3-22. Generators are required to maintain an audit trail of hazardous waste from the point of generation (OEBGD, Chapter 6, Section 1, Criteria 4(c)).	Verify that generators using DRMS disposal services have a signed copy of the manifest from the initial DRMS recipient of the waste. (2)(19) (NOTE: A generator that uses the hazardous waste management and/or disposal program of a DOD component that has a different unique identification number will obtain a signed copy of the manifest from the receiving component.) Verify that installations that dispose of their waste outside of the DRMS system have developed their own manifest tracking system. (2)(19)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
HAZARDOUS WASTE ACCUMULATION POINTS	
3-23. Hazardous waste accumulation points (HWAP) are required to meet specific design and operating standards (OEBGD, Chapter 6, Section 2).	Verify that the accumulation point is at or near the point of generation and no more than 206 L (55 gal) of hazardous waste or 1 L (1 qt) of acute hazardous waste (Appendix 3-1) from each waste stream is accumulated there. (1)(2)(19) Verify that each HWAP is designed and operated to provide appropriate segregation for different waste streams and those that are chemically incompatible. (1)(2)(19) (NOTE: See Appendix 3-4 for a list of incompatible wastes.) Verify that each HWAP has warning signs appropriate to the waste being accumulated at the site. (1)(2)(19) Verify that after leaving the HWAP, the waste either goes to an on-site hazardous waste storage area or to an off-site treatment and disposal facility. (1)(2)(19)
...	...
3-24. Containers at HWAPs are required to meet specific standards (OEBGD, Chapter 6, Section 2, Criteria 3 and Section 4, Criteria 1(a) through 1(d)).	Verify that containers are in good condition, and free from severe rusting, bulging, or structural defects. (1)(2)(19) Verify that containers, including overpack containers, are compatible with the materials stored. (1)(2)(19) Verify that containers are always closed, except when they need to be opened to add or remove waste. (1)(2)(19) Verify that containers are not opened, handled, or stored in a manner that could cause a rupture or a leak. (1)(2)(19) Verify that containers are marked with a hazardous waste marking and a label indicating the hazard class of the wastes (flammable, corrosive, etc.). (1)(2)(19)
...	...
3-25. The HWAP container storage area must have a containment system (OEBGD, Chapter 6, Section 2, Criteria 3).	Verify that container storage areas have a containment system such as a drip pan, that has sufficient capacity to contain 10 percent of the volume of the containers or the volume of the largest container, whichever is greater. (1)(2)(19) (NOTE: This only applies to containers that hold free liquids.)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-26. The HWAP must be inspected weekly for leaking containers and for deterioration of the containment system caused by corrosion and other factors (OEBGD, Chapter 6, Section 2, Criteria 3 and Section 4, Criteria 1(e)).	Verify that a weekly inspection is performed. (1)(2)(19) Verify that secondary containment systems are inspected for defects and emptied of accumulated wastes. (1)(2)(19)
...	...
3-27. HWAPs that have containers holding ignitable or reactive waste must be located at least 15 meters (m), or 50 feet (ft), inside the installations boundary (OEBGD, Chapter 6, Section 2, Criteria 3 and Section 4, Criteria 3).	Determine if the HWAP has containers holding ignitable or reactive wastes. (1)(2)(19) Verify that containers are at least 15 m, or 50 ft, from the boundary. (2)(19)
...	...
3-28. HWAPs are required to handle incompatible wastes according to specific standards (OEBGD, Chapter 6, Section 2, Criteria 3 and Section 4, Criteria 4).	Verify that incompatible wastes and materials are not placed in the same container. (2)(19) Verify that hazardous waste is not placed in an unwashed container that previously held an incompatible waste or material. (2)(19) Verify that storage containers holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments are separated from the other materials or protected from them by means of a dike, berm, wall, or other device. (2)(19)
...	...
HAZARDOUS WASTE TREATMENT/ STORAGE/ DISPOSAL FACILITIES	
3-29. New HWSAs are required to be located so as to minimize the risk of a release because of seismic activity, floods, or other natural events (OEBGD, Chapter 6, Section 3, Criteria 1).	Verify that new hazardous waste storage areas are located so as to minimize the risks from natural disasters. (18) *(NOTE: For facilities located where such risks may be encountered, the installation spill prevention and control plan must address the risk.)*
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-30. HWSAs are required to meet specific security requirements (OEBGD, Chapter 6, Section 3, Criteria 4).	Verify that unless the HWSA can demonstrate that physical contact with the waste, structures, or equipment within the active portion of the facility will not injure unknowing or unauthorized people or livestock, and that the waste would not be disturbed, one of the following are in place at the facility: (18)(23) - a 24-hour (h) surveillance system (e.g., television monitors, surveillance by guards) is in place and in operation - the facility is surrounded by a fence or natural barrier. Verify that a sign is posted with the words "Danger: Unauthorized Personnel Keep Out" at each entrance and at other locations in sufficient numbers to be seen from any approach to the HWSA. (18)(23) Verify that signs are written in English and any other language predominant in the area, and are legible from 1 m, or 25 ft. (18)(23)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-31. All HWSAs are required to be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (OEBGD, Chapter 6, Section 3, Criteria 2, 5, 6, and 7).	Verify that the following equipment is easily accessible and in working condition: (18)(23) - internal communications or alarm system capable of providing immediate emergency instructions to facility personnel - 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 (eyewash and shower) - 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 - personal protective equipment. Verify that the equipment is tested and maintained as necessary to insure proper operation in an emergency. (18) 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 facility operation. (18)(23) 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. (2)(5) Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency. (2)(5)
...	...
3-32. The storage of ignitable, reactive, or incompatible wastes at HWSAs is required to be done so that it does not threaten human health or the environment (OEBGD, Chapter 6, Section 3, Criteria 10).	Verify, from the operating record and/or observation, that when treating, storing, or disposing of ignitable or reactive wastes or when mixing incompatible wastes and other materials, precautions are taken to prevent the following reactions: (18)(23) - generation of extreme heat or pressure, fires or explosions, or violent reactions - production of uncontrolled toxic mists, fumes, dusts, or gases sufficient to threaten human health or the environment - production of uncontrolled flammable fumes or gases sufficient to pose a risk of fires or explosions - damage to the structural integrity of the device or facility - threat to human health or the environment through other like means. Verify that while ignitable or reactive waste is being handled, smoking and open flames are confined to specially designated areas. (18)(23) Verify that "No Smoking" signs are conspicuous and in English and any other predominant language. (18)(23) Verify that water reactive waste is not stored in the same area as flammable and combustible liquids. (18)(23)

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-33. A detailed chemical and physical analysis of a representative sample, as specified in the waste analysis plan, of the hazardous waste must be obtained prior to treatment, storage, or disposal (OEBGD, Chapter 6, Section 3, Criteria 3).	Verify that the waste analysis plan indicates how and when wastes are to be analyzed, including procedures for characterization and verification testing of both on-site and off-site hazardous waste. (18)(23) Verify that a detailed physical and chemical analysis is done of a representative sample of the wastes prior to treatment, storage, or disposal. (2)(18)(23) (NOTE: Prior studies and published information may be included as a part of the analysis.) Verify that the analysis is repeated as necessary to ensure that it is accurate and up to date, specifically if the process or operation generating the waste has changed. (2)(18)(19)(23)
...	...
3-34. The installation must have and keep a hazardous waste profile sheet (HWPS) on file for each waste handled by each HWSA (OEBGD, Chapter 6, Section 3, Criteria 3).	Verify that there is a file of HWPSs. (18)(23) Verify that no waste is accepted for storage unless the HWPS has been provided. (18)(23) Verify that the generator updates the HWPS as needed to reflect any new waste streams or process modifications that change the character of the hazardous waste being handled at the storage area. (18)(23)
...	...
3-35. The HWSA manager is required to conduct periodic verification testing of the hazardous waste in storage (OEBGD, Chapter 6, Section 3, Criteria 3(b)).	Verify that periodic testing is done to ensure that stored hazardous wastes are accurately identified by the generator. (18)(23)
...	...
3-36. Prior to accepting waste from a generator, the HWSA manager is required to follow specific procedures (OEBGD, Chapter 6, Section 3, Criteria 3(c)).	Verify that prior to accepting waste from generators, the HWSA manager: (18)(23) - inspects the waste to ensure that it matches the description provided - requests a new HWPS from the generator if there is reason to believe that the process generating the waste has changed - analyzes waste shipments to see if they match the waste description on the accompanying manifest and documents - rejects shipments that do not match the accompanying waste descriptions, unless the generator provides an accurate description.
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-37. The installation must inspect the HWSA for malfunction, deterioration, operator errors, and discharges (OEBGD, Chapter 6, Section 3, Criteria 8).	Verify that inspections are conducted according to a written schedule, kept at the HWSA, and at a sufficient frequency to identify problems in time to correct them before they harm human health or the environment. (18)(23) Verify that the schedule identifies the type of problems to be looked for during the inspection. (18)(23) Verify that the inspections include all equipment and areas involved in the storage and handling of hazardous waste. (18)(23) Verify that areas subject to spills, such as loading and unloading areas, are inspected daily when in use. (18)(23) Verify that when an imminent hazard is identified or has already occurred, action is taken immediately. (18)(23) Verify that inspections are recorded in an inspection log or summary that is kept for 3 yr from the date of inspection and includes: (18)(23) - date and time of inspection - name of the inspector - notation of the observations made - date and nature of any repairs or other remedial actions.
...	...
3-38. At the closure of an HWSA, all hazardous waste and hazardous waste residues must be removed (OEBGD, Chapter 6, Section 7).	Verify that at the closure of an HWSA, all hazardous waste and hazardous waste residues are removed from the containment system, including remaining liners and bases. (18)(23)
...	...
HWSAs **Containers**	
3-39. Containers at HWSAs are required to meet specific standards (OEBGD, Chapter 6, Section 4, Criteria 1(a) through 1(d)).	Verify that containers are in good condition and free from severe rusting, bulging or structural defects. (18)(23) Verify that containers, including overpack containers, are compatible with the materials stored. (18)(23) Verify that containers are always closed except when they need to be opened to add or remove waste. (18)(23) Verify that containers are not opened, handled, or stored in a manner that could cause a rupture or a leak. (18)(23) Verify that containers are marked with a hazardous waste marking and a label indicating the hazard class of the wastes (flammable, corrosive, etc.). (18)(23)

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-40. The HWSA container storage area must have a containment system (OEBGD, Chapter 6, Section 4, Criteria 2).	Verify that the container storage area has a containment system that has sufficient capacity to contain 10 percent of the volume of the containers or the volume of the largest container, whichever is greater. (18)(23) Verify that the HWSA is sufficiently impervious to contain leaks, spills, and accumulated precipitation until the collected material is detected and removed. (18)(23) (NOTE: This applies to containers that contain free liquids unless the storage area is sloped or otherwise designed and operated to drain and remove liquid from precipitation or the containers are elevated.)
...	...
3-41. The HWSA must be inspected weekly for leaking containers and for deterioration of containers and the containment system caused by corrosion and other factors (OEBGD, Chapter 6, Section 4, Criteria 1(e)).	Verify that a weekly inspection is performed. (18)(23) Verify that secondary containment systems are inspected for defects and emptied of accumulated wastes. (18)(23)
...	...
3-42. HWSAs that have containers holding ignitable or reactive waste must be located at least 15 m (50 ft) inside the installation's boundary (OEBGD, Chapter 6, Section 4, Criteria 3).	Determine if the HWSA has containers holding ignitable or reactive wastes. (2)(19) Verify that containers are at least 15 m from the boundary. (2)(19)
...	...
3-43. HWSAs are required to handle incompatible wastes according to specific standards (OEBGD, Chapter 6, Section 4, Criteria 4).	Verify that incompatible wastes and materials are not placed in the same container. (2)(19) Verify that hazardous waste is not placed in an unwashed container that previously held an incompatible waste or material. (2)(19) Verify that storage containers holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments are separated from the other materials or protected from them by means of a dike, berm, wall, or other device. (2)(19)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Tank Systems	
3-44. Secondary containment must be in place for specific types of tank systems used to store or treat hazardous waste (OEBGD, Chapter 6, Section 8, Criteria 1 and 4).	Verify that the following types of tanks used to store or treat hazardous waste have secondary containment: (6)(18)(19)(23) - all new tank systems or components - existing tank systems when the tank system annual leak test detects leakage - tanks systems that store or treat hazardous wastes by 1 January 1999. Verify that secondary containment meets the following criteria: (6)(18)(19)(23) - 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 to include one or more of the following: a liner external to the tank; a vault; or a double-walled tank. (NOTE: Exempted from these requirements are the following: - tanks systems used to store or treat hazardous wastes that contain 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.)
...	...
3-45. Tank ancillary equipment should also be provided with secondary containment (GMP).	Verify that ancillary equipment, except for the following, has secondary containment: (6)(18)(19)(23) - 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.
...	...
3-46. Existing tank systems without proper secondary containment, are required to meet specific standards (OEBGD, Chapter 6, Section 8, Criteria 2).	Verify that for tank systems without proper secondary containment, an annual determination is made as to whether the tank system is leaking or is fit for use. (6)(18)(19)(23) Verify that the installation maintains a record of the results of testing and assessments. (2)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-47. When new tank systems or components are installed, managers of HWSAs must obtain a written assessment, reviewed and certified by a competent authority, certifying that the tank is acceptable (OEBGD, Chapter 6, Section 8, Criteria 3)	Verify that the certification states that the tank system has sufficient structural integrity and is acceptable for the storing and treating of hazardous waste. (2)(6)
...	...
3-48. Tanks used for hazardous waste treatment or storage must be operated according to specific procedures (OEBGD, Chapter 6, Section 8, Criteria 5(a)).	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. (18)(19)(23)
...	...
3-49. Tank systems should comply with specific parameters for ignitable, reactive, or incompatible wastes (GMP).	Verify that ignitable or reactive wastes are not placed in a tank system unless one of the following is met: (18)(19)(23) - 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 "Flammable and Combustible Liquids Code," are maintained. (1)(18)(19)(23) Verify that incompatible wastes, or incompatible wastes and materials, are not placed in the same tank system unless minimum safety requirements are met. (18)(19)(23) 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. (18)(19)(23)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-50. Installations are required to conduct inspections of tank systems and associated equipment (OEBGD, Chapter 6, Section 10, Criteria 5(b) and 5(c)).	Verify that inspections of the following are conducted and logged at least once a day: (6)(18)(19)(23) - aboveground portions of the tank to detect corrosion or releases - tank monitoring equipment (e.g., pressure and temperature gauges) - data gathered from monitoring and leak detection equipment - 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. (2)(6)(18)(19)(23) Verify that all sources of impressed current are inspected and/or tested every other month. (2)(18)(19)(23) Verify that inspections are documented. (2)
...	...
3-51. Tank systems or secondary containment systems that have leaked, spilled, or been declared unfit for use must be removed from service immediately and have specific requirements met (OEBGD, Chapter 6, Section 10, Criteria 6).	Verify that the follow steps are taken: (2)(6)(18)(19)(23) - stop the flow or addition of hazardous wastes to the tank - inspect systems to determine the cause of the release - contain the visible release and prevent further migration of the leak or spill to soils or surface water - remove and properly dispose of any contamination of the soil and surface water - complete required notifications and reports. 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. (2)
...	...
3-52. Installations must follow specific procedures when closing a tank system (OEBGD, Chapter 6, Section 8, Criteria 7).	Determine if the installation has closed any tank systems. (2) Verify that all waste residues and contaminated containment system components, soils, structures, and equipment have been removed or decontaminated to the extent practicable. (2)(6)(18)(19)(23)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Documentation	
3-53. HWSAs and HWAPs are required to keep a written log, inspection logs, manifests, and waste analysis/ characterization records and the plan must be developed prior to the opening of a new HWSA (OEBGD, Chapter 2, Section 5, Criteria 1 through 6).	Verify that a written log of all hazardous waste is maintained and consists of the following: (1)(2)(18)(23) - name/address of generator - description and hazard class of the hazardous waste - number and types of containers - date stored - storage location - disposition data. Verify that the hazardous waste log is available to emergency personnel in the event of a fire or a spill and is maintained until the closure of the installation. (1)(2)(18)(23) Verify that inspection logs are maintained for 3 yr. (1)(2)(18)(23) Verify that manifests of incoming and outgoing hazardous wastes are retained for 3 yr. (1)(2)(18)(23) Verify that waste analysis/characterization records are retained until 3 yr after closure. (1)(2)(18)(23)
...	...
3-54. HWSAs are required to have a closure plan (OEBGD, Chapter 6, Section 5, Criteria 5).	Verify that the HWSA has a closure plan that includes estimates of the storage capacity of hazardous waste, the steps to be taken to remove or decontaminate all waste residues, and an estimate of the expected date of closure. (1)(2)(18)(23)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
3-55. Installations are required to have a contingency plan to manage spills and releases of hazardous waste (OEBGD, Chapter 6, Section 6, Criteria 1; Chapter 18, Criteria 4).	Verify that the contingency plan is designed to minimize hazards to human health and the environment from fires, explosions, or any unplanned, sudden or nonsudden release of hazardous waste or hazardous waste constituents. (2)(18)(23) Verify that a copy of the contingency plan is maintained at the HWSA and each HWAP. (2)(18)(23) Verify that the plan has been submitted to all police departments, fire departments, hospitals, and emergency response teams that the plan relies upon to provide emergency services. (2)(18)(23) Verify that the plan is available in both English and the host nation language. (2)(18)(23) Verify that the plan includes the following: (1)(2)(18)(23) - a description of actions to be taken during an emergency - a description of arrangements made with local police departments, fire departments, hospitals, contractors, and local emergency response teams - names, addresses, and phone numbers of all people qualified to act as emergency coordinator - a list of all emergency equipment at the facility stating where this equipment is required, and located and what it looks like an evacuation plan for facility personnel where there is a possibility evacuation would be needed. Verify that the contingency plan is annually 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. (1)(2) (NOTE: See the requirements for the Spill Plan as outlined in the section titled *POL Management*.)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Disposal	
3-56. The Executive Agent is required to determine if DOD hazardous waste may be disposed of in the host nation (OEBGD, Chapter 6, Section 11, Criteria 2(b) and 3).	Determine which hazardous wastes may be disposed of in the host nation, according to the Executive Agent. (1)(4)
...	...
3-57. DOD hazardous waste is required to be disposed of through DRMS (OEBGD, Chapter 6, Section 11, Criteria 1).	Verify that if DRMS is not used for disposal, the decision was made in accordance with DODD 4001.1 for the best accomplishment of the installation mission and is concurred in by the component chain of command. (1)(4)
...	...
3-58. Wastes generated at DOD installations that are considered hazardous under either U.S. law or host nation laws cannot be disposed of in the host unless the disposal is conducted according to the final governing standards and additional specific parameters (OEBGD, Chapter 6, Section 11, Criteria 2).	Verify that if a hazardous waste cannot be disposed of according to the final governing standards within the host nation, it is then either retrograded to the United States or, if permissible under international agreements, transferred to another country where it can be disposed of in an environmentally sound manner and according to the final governing standards applicable to the country where disposal will occur. (1)(4) Verify that shipment of hazardous wastes to another country other than the United States for disposal has DOD approval. (1)(4) (NOTE: The determination of whether particular DOD-generated hazardous waste may be disposed of in a host nation will be made by the DOD Executive Agent in coordination with the Director of Defense Logistics Agency, or other relevant DOD components, and the Chief of the U.S. Diplomatic Mission.)
...	...
3-59. Hazardous materials that meets the definitions of hazardous waste and is discarded, either by the generating installation because it is no longer a useful product or by the DRMS because it has failed the reutilization, transfer, or sales cycles, is required to be disposed of as a hazardous waste (OEBGD, Chapter 6, Section 11, Criteria 4).	Verify that, when necessary, hazardous materials are disposed of as a hazardous waste. (1)(4)

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
3-60. Installations that use host nation facilities to store, treat, or dispose of DOD-generated waste must ensure that the facilities are approved by the host nation as being in compliance (OEBGD, Chapter 6, Section 11, Criteria 5).	Verify that the host nation facility has a permit or host nation equivalent for the hazardous wastes that will be generated. (1)(18)
...	...
Land Disposal	
3-61. Hazardous wastes may be land disposed when there is a reasonable degree of certainty that hazardous constituents will not migrate from the disposal site and if the facility meets specific criteria (OEBGD, Chapter 6, Section 10, Criteria 7).	Verify that the land disposal system has: (18) - a liner of natural or man-made materials that restricts the downward or lateral escape of hazardous waste, hazardous constituents, or leachate and has a permeability of no more than 10^{7} centimeters per second (cm/s) - a leachate collection system - a groundwater monitoring program capable of determining the facility's impact on the quality of water in the aquifers underlying the facility. (NOTE: The Executive Agent may waive these requirements for a particular land disposal site by the Executive Agent.)
...	...
Incinerators	
3-62. Hazardous waste incinerators, including boilers and industrial furnaces for any recycling purposes, are required to meet specific standards (OEBGD, Chapter 6, Section 11, Criteria 8).	Verify that incinerators used to dispose of hazardous waste are licensed or permitted by a competent host nation authority or approved by the Executive Agent. (18) Verify that the license, permit, or Executive Agent requires the incinerator to be designed to include appropriate equipment as well as to be operated according to management practices and other relevant criteria so as to effectively destroy hazardous constituents and control harmful emissions. (18)
...	...

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Treatment Technologies	

3-63. Wastes categorized as hazardous on the basis of Section A.1 of Appendix 3-1 and that, after the use of approved treatment technologies, no longer exhibit any hazardous characteristic may be disposed of as solid waste (OEBGD, Chapter 6, Section 11, Criteria 9).	Verify that the following approved treatment technologies is used: (1)(2)(4)
	- for organics:
	  - incineration
	  - fuel substitution where the units are operated so that destruction of hazardous constituents is at least as efficient, and hazardous emissions are no greater than those produced by incineration
	  - biodegradation
	  - recovery
	  - chemical degradation
	- for heavy metals:
	  - stabilization or fixation
	  - recovery
	- reactives are treated so that the chemical or physical composition of a material no longer exhibits the characteristic of reactivity
	- corrosives are neutralized to a pH value between 6.0 and 9.0 or undergo:
	  - recovery
	  - incineration
	  - chemical or electrolytic oxidation
	  - chemical reduction
	  - stabilization.

...	...

3-64. Treatment residues of wastes categorized as hazardous under all sections of Appendix 3-1, except Section A.1, must be managed as hazardous waste (OEBGD, Chapter 6, Criteria 9).	Verify that treatment residues, from the following treatment technologies, that are classified as hazardous waste are managed as hazardous waste: (1)(2)(4)
	- for organics:
	  - incineration
	  - fuel substitution where the units are operated so that destruction of hazardous constituents is at least as efficient, and hazardous emissions are no greater than those produced by incineration
	  - biodegradation
	  - recovery
	  - chemical degradation
	- for heavy metals:
	  - stabilization or fixation
	  - recovery
	- reactives are treated so that the chemical or physical composition of a material no longer exhibits the characteristic of reactivity
	- corrosives are neutralized to a pH value between 6.0 and 9.0 or undergo:
	  - recovery
	  - incineration
	  - chemical or electrolytic oxidation
	  - chemical reduction
	  - stabilization.

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Specific Wastes	
3-65. Mercury, nickel-cadmium, lithium, and lead acid batteries are required to be processed to stabilize, fix, or recover heavy metals and neutralize any corrosives prior to disposal (OEBGD, Chapter 6, Section 11, Criteria 9(e)).	Verify that the listed batteries are being treated prior to disposal. (2)(4)
...	...

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Appendix 3-1

CHARACTERISTICS OF HAZARDOUS WASTES AND LISTS OF HAZARDOUS WASTES AND HAZARDOUS MATERIALS

A-1 CHARACTERISTICS OF HAZARDOUS WASTE

(a) General

(1) A solid waste is a hazardous waste if it exhibits any of the characteristics identified in this section.

(2) A hazardous waste which is identified by a characteristic in this section is assigned every USEPA Hazardous Waste Number that is applicable. This number must be used in complying with the notification, recordkeeping, and reporting requirements of these alternate standards.

(b) Characteristic of Ignitability

(1) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(i) It is a liquid, other than an aqueous solution that contains less than 24 percent alcohol by volume and has a flash point less than 60 °C (140 °F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-80, or a Setaflash Closed Cup Tester, using the test method specified in ASTM Standard D-3278-78 or as determined by an equivalent test method.

(ii) It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard.

(iii) It is an ignitable, compressed gas as determined by appropriate test methods or USEPA.

(iv) It is an oxidizer.

(2) A solid waste that exhibits the characteristic of ignitability has the EPA Hazardous Waste Number of D001.

(c) Characteristic of Corrosivity

(1) A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

(i) It is acqueous and has a pH less than or equal to 2.0 or greater than or equal to 12.5, as determined by a pH meter.

(ii) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 millimeters (mm), or 0.250 inch (in.), per year at a test temperature of 55 °C (130 °F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69 as standardized in *Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods.*

(2) A solid waste that exhibits the characteristic of corrosivity has the EPA Hazardous Waste Number of D002.

(d) Characteristic of Reactivity

(1) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties:

(i) It is normally unstable and readily undergoes violent change without detonating.

(ii) It reacts violently with water.

(iii) It forms potentially explosive mixtures with water.

(iv) When mixed with water, it generates toxic gases, vapors, or fumes in a quantity sufficient to present danger to human health or the environment.

(v) It is a cyanide or sulfide bearing waste that, when exposed to pH conditions between 2.0 and 12.5, can generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.

(iv) It is capable of detonation or explosive reaction if subjected to a strong initiating source or if heated under confinement.

(vii) It is readily capable of detonation, explosive decomposition, or reaction at standard temperature and pressure.

(viii) It is a forbidden explosive.

(2) A solid waste that exhibits the characteristic of reactivity has the EPA Hazardous Waste Number of D003.

(e) Toxicity Characteristic

(1) A solid waste exhibits the characteristic of toxicity if, the extract from a representative sample of the waste contains any of the contaminants listed in table A.1(a) or (b) at the concentration equal to or greater than the respective value given in that Table. Where the waste contains less than 0.5 percent filterable solids, the waste itself is considered to be the extract for the purpose of this section.

(2) A solid waste that exhibits the characteristic of toxicity has the EPA Hazardous Waste Number specified in Table A.1 (a) or (b) which corresponds to the toxic contaminant causing it to be hazardous.

TABLE A.1(a)

MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC

USEPA HW No.[1]	Contaminant	CAS No.[2]	Regulatory Level milligrams (mg/L)
D004	arsenic	7440-38-2	5.0
D005	barium	7440-39-3	100.0
D006	cadmium	7440-43-2	1.0
D007	chromium	7440-47-3	5.0
D016	2,4-D	94-75-7	10.0
D012	endrin	72-20-8	0.02
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
D010	selenium	7782-49-2	1.0
D011	silver	7440-22-4	5.0
D015	toxaphene	8001-35-2	0.5
D017	2,4,5-TP (silvex)	93-72-1	1.0

[1] USEPA Hazardous waste number.

[2] Chemical Abstracts Service number.

TABLE A.1(b)

MAXIMUM CONCENTRATION OF CONTAMINANTS FOR NON-WASTEWATER

USEPA HW No.[1]	Contaminant	CAS No.[2]	Regulatory Level mg/kilograms (kg)
D018	Benzene	71-43-2	36
D019	Carbon tetrachloride	56-23-5	5.6
D020	Chlordane	57-74-9	0.13
D021	Chlorobenze	108-90-7	5.7
D022	Chloroform	67-66-3	5.6
D023	0-Cresol	95-48-7	5.6
D024	m-Cresol	108-39-4	3.2
D025	P-Cresol	106-44-5	3.2
D026	Cresol		3.2
D027	1,4-Dichlorobenzene	106-46-7	6.2
D028	1,2-Dichloroethane	107-06-2	7.2
D029	1,1-Dichloroethylene	75-35-4	33
D030	2,4-Dinitrotoluene	121-14-2	140
D031	Heptachlor (and its epoxide)	76-44-8	0.066
D032	Hexachlorobenzene	118-74-1	37
D033	Hexachlorobutadiene	87-68-3	28
D034	Hexachloroethane	67-72-1	28
D035	Methyl Ethyl Ketone	78-93-3	36
D036	Nitrobenzene	98-95-3	14
D037	Pentachlorophenol	87-86-5	7.4
D038	Pyridine	110-86-1	16
D039	Tetrachloroethylene	127-18-4	5.6
D040	Trichloroethylene	79-01-6	5.6
D041	2,4,5-Trichlorophensol	95-95-4	37
D042	2,4,6-Trichlorophenol	88-06-2	37
D043	Vinyl Chloride	75-01-4	33

[1] USEPA Hazardous waste number.

[2] Chemical Abstracts Service number.

A-2 LISTS OF HAZARDOUS WASTES

(a) General

(1) A solid waste is a hazardous waste if it is listed in this section.

(2) The basis for listing the classes or types of wastes listed employed one or more of the following Hazard Codes:

Ignitable Waste	(I)
Corrosive Waste	(C)
Reactive Waste	(R)
Toxicity Characteristic Waste	(E)
Acute Hazardous Waste	(H)
Toxic Waste	(T)

(3) Each hazardous waste listed in section A-2 is assigned a USEPA Hazardous waste Number which precedes the name of the waste. This number must be used in complying with the notification, recordkeeping and reporting requirements of these alternative standards.

(b) Hazardous Wastes from Non-Specific Sources

The solid wastes in Table A.2 are listed hazardous wastes from non-specific sources.

(c) The solid wastes listed in Table A.3, annoted "K" as the first character in the USEPA number are *listed hazardous wastes from specific sources.*

(d) Discarded Commercial Chemical Products, Off-Specification Species, Container Residues, and Spill Residues Thereof

The following materials or items are hazardous wastes if and when they are discarded or intended to be discarded: when they are mixed with waste oil, or used oil, or other material and applied to the land for dust suppression or road treatment: when they are otherwise applied to the land in lieu of their original intended use; when they are contained in products that are applied to the land in lieu of their original intended use; or when, in lieu of their original intended use, they are produced for use as (or as a component of) a fuel, distrubuted for use as a fuel, or burned as a fuel.

(1) Any commercial chemical product, or manufacturing chemical intermediate with the generic name listed in Table A.3, annotated "P" or "U" as the first character in the USEPA waste number.

(2) Any off-specification commercial chemical product or manufacturing chemical intermediate that, if it met specifications, would have the generic name listed in Table A.3, annotated "P" or "U" as the first character in the USEPA waste number.

TABLE A.2

LISTED HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES

USEPA Waste No.[1]	Hazardous Waste	Hazard Code
F001	The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/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 or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F002	The following spend halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, orthodichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blens 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 following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents and a total of 10 percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I)
F004	The following spent non-halogenated solvents: cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F005	The following spent non-halogenated solvents: Toluene, methyl- ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I,T)[2]

USEPA Waste No.[1]	Hazardous Waste	Hazard Code
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 planting (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	(T)
F007	Spent cyanide plating bath solutions 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 where cyanides are used in the process.	(R,T)
F010	Quenching bath residues from oil baths from metal heat treating operations where 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 exclusion conversion coating process.	(T)

Notes

[1] USEPA Hazardous Waste Number

[2] (I,T) should be used to specify mixtures containing ignitable and toxic constituents.

(3) Any residue remaining in a container or in an inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate having the generic name listed in Table A.3, annotated "P" or "U" as the first character in the USEPA waste number, unless the container is empty.

(Comment: Unless the residue is being beneficially used or reused, being legitimately recycled or reclaimed, or being accumulated, stored, transported, or treated prior to such use, reuse, recycling or reclamation, the residue should be discarded, and is thus, a hazardous waste. An example of a legitimate reuse of the residue would be where the residue remains in the container, and the container is used to hold the same commercial chemical product or manufacturing chemical intermediate it previously held. An example of the discard of the residue would be where the drum is sent to a drum reconditioner who reconditions the drum but discards the residue.)

(4) Any residue or contaminated soil, water or other debris resulting from the cleanup of a spill into or on any land or water of any commercial chemical product or manufacturing chemical intermediate having the generic name listed in Table A.3, annotated "P" or "U" as the first character in the USEPA waste number, or any residue or contaminated soil, water or other debris resulting from the cleanup of a spill into or on any land or water of any off-specification chemcial product and manufacturing chemical intermediate that, if it me specifications, would have the generic name listed in Table A.3, annotated "P" or "U" as the first character in the USEPA waste number of this section.

(Comment: The phrase "commercial chemical product or manufacturing chemical intermediate having the generic name listed in ..." refers to a chemical substance that is manufactured or formulated for commercial or manufacturing use that consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulation in which the chemical is the sole active ingredient. It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in Table A.3, annotated "P" or "U" as the first character in the USEPA waste number. Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in Table A.3, annotated "P" or "U" as the first character in the USEPA waste number, such waste will be listed in section A.2 or will be identified as a hazardous waste by the characteristics set forth in section A-1.)

(5) The commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products or manufacturing chemical intermediates referred to in Table A.3, annoted "P" as the first character in the USEPA waste number, are hereby identified as acute hazardous wastes (H).

(Comment: For the convenience of the regulated community, the 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.]

These wastes and their corresponding USEPA Hazardous Waste Numbers are listed in Table A.3, annotated "P" as the first character in the USEPA waste number.

(6) The commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products referred to in Table A.3 of this section are hereby identified as toxic wastes (T), unless otherwise designated.

[Comment: For the convenience of the regulated community, the primary hazardous properties of these materials have been indicated by the letter T (Toxicity), R (Reactivity), I (Ignitability), and C (Corrosivity). Absence of a letter indicates that the compound is only list for toxicity.]

TABLE A.3
LIST OF HAZARDOUS WASTE/SUBSTANCES/MATERIALS

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Acenaphthene	83329			100
Acenaphthylene	208968			5000
Acetaldehyde (i)	75070		U001	1000
Acetaldehyde, chloro-	107200		P023	1000
Acetaldehyde, trichloro-	75876		U034	5000
Acetamide, N-(aminothioxomethyl)-	591082		P002	1000
Acetamide, N-(4-ethoxyphenyl)-	62442		U187	100
Acetamide, 2-fluoro-	640197		P057	100
Acetamide, N-9H-fluoren-2-yl-	53963		U005	1
Acetic acid	64197			5000
Acetic acid (2,4-dichlorophenoxy)-	94757		U240	100
Acetic acid, lead(2+) salt	301042		U144	#
Acetic acid, thallium(1+) salt	563688		U214	100
Acetic acid, ethyl ester (I)	141786		U112	5000
Acetic acid, fluoro-, sodium salt	62748		P058	10
Acetic anhydride	108247			5000
Acetone (I)	67641		U002	5000
Acetone cyanohydrin	75865	1000	P069	10
Acetone thiosemicarbazide	1752303	1000/10000		1
Acetonitrile (I,T)	75058		U003	5000
Acetophenone	98862		U004	5000
2-Acetylaminofluorene	53963		U005	1
Acetyl bromide	506967			5000
Acetyl chloride (C,R,T)	75365		U006	5000
1-Acetyl-2-thiourea	591082		P002	1000
Acrolein	107028	500	P003	1
Acrylamide	79061	1000/10000	U007	5000
Acrylic acid (I)	97107		U008	5000
Acrylonitrile	107131	10000	U009	100
Acrylyl chloride	814686	100		1
Adipic acid	124049			5000
Adiponitrile	111693	1000		1
Aldicarb	116063	100/10000	P070	1
Aldrin	309002	500/10000	P004	1
Allyl alchol	107186	1000	P005	100

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Allylamine	107119	500		1
Ally chloride	107051			1000
Aluminum phosphide (R,T)	20859738	500	P005	100
Aluminum sulfate	10043013			5000
5-(Aminomethyl)-3-isoxazolol	2763964		P007	1000
Aminoptenn	54626	500/10000		1
4-Aminopyndine	504245		P008	1000
Amiton	78535	500		1
Amiton oxalate	3734972	100/10000		1
Amitrole	61825		U011	10
Ammonia	7664417	500		100
Ammonium acetate	631618			5000
Ammonium benzoate	1863634			5000
Ammonium bicarbonate	1066337			5000
Ammonium bichromate	7789095			10
Ammonium bifluonde	1341497			100
Ammonium bisulfite	10192300			5000
Ammonium carbamate	1111780			5000
Ammonium carbonate	506876			5000
Ammonium chloride	12125029			5000
Ammonium chromate	778989			10
Ammonium citrate, dibasic	3012655			5000
Ammonium fluoborate	13826830			5000
Ammonium fluoride	12125018			100
Ammonium hydroxide	1336216			1000
Ammonium oxalate	6009707 5972736 14258492			5000
Ammonium picrate (R)	131748		P009	10
Ammonium silicofluoride	16919190			1000
Ammonium sulfamate	7773060			5000
Ammonium sulfide	12135761			100
Ammonium tartrate	14307438 3164292			5000
Ammonium thiocyanate	1762954			5000

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Ammonium vanadate	7803556		P119	1000
Amphetamine	300629	1000		1
Amyl acetate iso-Amyl acetate Sec-Amyl acetate tert-Amyl acetate	628637 123922 626380 625161			5000
Aniline (I,T)	62533	1000	U012	5000
Aniline. 2,4,6- trimethyl	88051	500		1
Anthracene	120127			5000
Antimony++	7440360			5000
Antimony pentachloride	7647189			1000
Antimony pentafluoride	7783702	500		1
Antimony potassium tartrate	28300745			100
Antimony tribromide	7789619			1000
Antimony trichloride	10025919			1000
Antimony trifluoride	7783564			1000
Antimony trioxide	1309644			1000
Antimycine A	1397940	1000/10000		1
ANTU	86884	500/10000		100
Argentate(1-), bis(cyano-C)-, potassium	506616		P099	1
Aroclor 1016	12674112			1
Aroclor 1221	11104282			1
Arcolor 1232	11141165			1
Aroclor 1242	53469219			1
Aroclor 1248	12672296			1
Aroclor 1254	11097691			1
Aroclor 1260	11096825			1
Arsenic++	7440382			1
Arsenic acid H_3AsO_4	1327522 7778394		P010	1
Arsenic disulfide	1303328			1
Arsenic oxide As_2O_3	1327533		P012	1
Arsenic oxide As_2O_5	1303282		P011	1
Arsenic pentoxide	1303282	100/10000	P011	1
Arsenic trichloride	7784341			1

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Arsenic trioxide	1327533		P012	1
Arsenic trisulfide	1303339			1
Arsenous trichloride	7784341	500		5000
Arsine	7784421	100		1
Arsine, diethyl-	692422		P038	1
Arsinic acid, dimethyl-	75605		U136	1
Arsorous dichloride, phenyl-	696286		P036	1
Asbestos+++	1332214			1
Auramine	492808		U014	100
Azasenne	115028		U015	1
Azindine	151564		P054	1
Azindine, 2-methyl-	75558		P067	1
Azinno[2',3',3,4]pyrrolo[1,2-a] indole-4, 7-dione,6-amino-8- [(aminocarbonylooxy) methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-,[1aS-(1a-alpha,8-beta, 8a-alpha, 8b-alpha)]-	50077		U010	10
Aziphos-ethyl	2642719	100/10000		1
Azinphos-methyl	86500	10/10000		1
Banum cyanide	542621		P013	10
Benz[1]aceanthrylene, 1,2-dihydro-3-methyl-	56421		U157	10
Benz[c]acridine	225514		U016	100
Benzal chloride	98873	500	U017	5000
Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-	23950595		U192	5000
Benz[a]anthracene	56553		U018	10
1,2-Benzathracene	56553		U018	10
Benz[a]anthracene, 7,12-dimethyl-	57976		U094	1
Benzenamine (I,T)	62533		U012	5000
Benzenamine, 3-(Trifluoromethyl)	98168	500		1
Benzenamine, 4,4'-carbonimidoylbis (N,N-dimethyl-	492808		U014	100
Benzenamine, 4-chloro-	106478		P024	1000
Benzenamine 4-chloro-2-methyl-, hydrochloride	3165933		U049	100

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Benzenamine, N,N-dimethyl-4-(phenylazo-)	60117		U093	10
Benzenamine, 2-methyl-	95534		U328	100
Benzenamine, 4-methyl-	106490		U353	100
Benzenamine, 4,4'-methylenebis(2-chloro-	101144		U158	10
Benzenamine, 2-methyl-, hydrochloride	636215		U222	100
Benzenamine, 2-methyl-5-nitro-	99558		U181	100
Benzenamine, 4-nitro-	100016		P077	5000
Benzene (I,T)	71432		U109	10
Benzene, 1-(Chloromethyl)-4-Nitro-	100141	500/10000		1
Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester	510156		U038	100
Benzene, 1-bromo-4-phenoxy-	101553		U030	100
Benzenearsonic Acid	98055	10/10000		1
Benzenebutanoic acid, 4-[bis (2-chloroethyl)amino]-	305033		U035	10
Benzene, chloro-	108907		U037	100
Benzene, chloromethyl-	100447		P028	100
Benzenediamin, ar-methyl-	95807 496720 823405		U221	10
1,2-Benzenedicarboxylic acid, dioctyl ester	117840		U107	5000
1,2-Benzenedicarboxylic acid, [bis(2-ethylhexyl)]-ester	117817		U028	100
1,2-Benzenedicarboxylic acid, dibutyl ester	84742		U069	10
1,2-Benzenedicarbosylic acid, diethyl ester	84662		U088	1000
1,2-Benzenedicarbosylic acid, dimethyl ester	131113		U102	5000
Benzene, 1,2-dichloro-	95501		U070	100
Benzene, 1,3-dichloro-	541731		U071	100
Benzene, 1,4-dichloro-	106467		U072	100
Benzene, 1,1'-(2,2-dichloroethylidene) bis[4-chloro-	72548		U)60	1
Benzene, dichloromethyl-	98873		U017	5000

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Benzene, 1,3-diisocyanotomethyl- (R,T)	584849 91087 264716254		U223	100
Benzene, dimethyl (I,T) m-Benzene, dimethyl o-Benzene, dimethyl p-Benzene, dimethyl	1330207 108383 95476 106423		U239	1000
1,3-Benzenediol	108463		U201	5000
1,2-Benzenediol, 4-[1 -hydroxy-2-(methylamino)ethyl]- (R)	51434		P042	1000
Benzeneethanamine, alpha, alpha-dimethyl-	122098		P046	5000
Benzene, hexachloro-	118741		U127	10
Benzene, hexahydro- (I)	110827		U056	1000
Benzene, hydroxy-	108952		U188	1000
Benzene, methyl-	108883		U220	1000
Benzene, 2-methyl-1,3-dinitro-	606202	U106	100	
Benzene, 1-methyl-2,4-dinitro-	121142		U105	10
Benzene, 1-methylethyl- (I)	98828		U055	5000
Benzene, nitro-	98953		U169	1000
Benzene, pentachloro	608935		U183	10
Benzene, pentachloronitro-	82688		U185	100
Benzenesulfonic acid chloride (C,R)	98099		U020	100
Benzenesulfonyl chloride	98099		U020	100
Benzene, 1,2,4,5-tetrachloro-	95943		U207	5000
Benzenethiol	108985		P014	100
Benzene, 1,1'-(2,2,2-tri-chloroethylidene)bis[4-chloro-	50293		U061	1
Benzene, 1,1'-(2,2,2-tri-chloroethylidene)bis[4-methoxy-	72435		U247	1
Benzene,(trichloromethyl)-	98077		U023	10
Benzene, 1,3,5-trinitro-	99354		U234	10
Benzidine	92875		U021	1
Benzimidazole, 4,5-Dichloro-2-(Trifluormethyl)-	3615212	500/10000		1
1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide	81072		U202	100

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Benzo[a]anthracene	56553		U018	10
Benzo[b]fluoranthene	205992			1
Benzo[k]fluoranthene	207089			5000
Benzo[j,k]fluorene	206440		U120	100
1,3-Benzodioxole, 5-(1-propenyl)-	120581		U141	'100
1,3-Benzodioxole, 5-(2-propenyl)-	94597		U203	100
1,3-Benzodioxole, 5-propyl	94586		U090	10
Benzoic acid	65850			5000
Benzonitrile	100470			5000
Benzo[rst]pentaphene	189559		U064	10
Benzo[ghi]perylene	191242			5000
2H-1-Benzophyran-2-one, 4-hydroxy-3-oxo-1-phenyl-butyl)-, & salts, when present at concentrations greater than 0.3%	81812		P001	100
Benzo[a]pyrene	50328		U022	1
3,4-Benzopyrene	50328		U022	1
p-Benzoquinone	106514		U197	10
Benzotrichloride (C,R,T)	98077	100	U023	10
Benzoyl chloride	98884			1000
1,2-Benzphenanthrene	218019		U050	100
Benzyl chloride	100447	500	P028	100
Benzy cyanide	140294	500		1
Beryllium++	7440417		P015	10
Beryllium chloride	7787475			1
Beryllium fluoride	7787497			1
Beryllium nitrate	13597994 7787555			1
alpha-BHC	319846			10
beta-BHC	319857			1
delta-BHC	319868			1
gamma-BHC	58899		U129	1
Bicyclo [2,2,1]Heptane-2-carbonitrile, 5-chloro-6-(((Methylamino)Carbonyl)Oxylmino)-, (1s-(1-alpha, 2-beta, 4-alpha, 5-alpha, 6E))-	15271417	500/10000		1
2,2'-Bioxirane	1464535		U085	10

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
(1,1'-Biphenyl)-4,4'diamine	92875		U021	1
(1,1'-Biphenyl)-4,4'diamine, 3,3'dichloro-	91941		U073	1
(1,1'-Biphenyl)-4,4'diamine, 3,3'dimethoxy-	119904	U091	100	
(1,1'-Biphenyl)-4,4'diamine, 3,3'dimethyl-	119937		U095	10
Bis(chloromethyl) ketone	534076	10/10000		1
Bis(2-chloroethyl)ether	111444		U025	10
Bis(2-chloroethoxy)methane	111911		U024	1000
Bis(2-ethylhexyl)phthalate	117817		U028	100
Bitoscanate	4044659	500/10000		1
Boron trichloride	10294345	500		1
Boron trifluoride	7637072	500		1
Boron trifluoride compound with methyl ether (1:1)	353424	1000	1	
Bromoacetone	598312		P017	1000
Bromadiolone	28772567	100/10000		1
Bromine	7726956	500		1
Bromoform	75252		U225	100
4-Bromophenyl phenyl ether	101553		U030	100
Brucine	357573		P018	100
1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	87683		U128	1
1-Butanamine, N-butyl-N-nitroso-	924163		U172	1
1-Butanol	71363		U031	5000
2-Butanone	78933		U159	5000
2-Butanone peroxide (R,T)	1338234		U160	10
2-Butanone, 3,3-dimethyl-1-(methylthio)-, O[(methylamno) carbonyl] oxime	3916184		P045	100
2-Butenal	123739 4170303		U053	100
2-Butene, 1,4-dichloro- (I,T)	764410		U074	1
2-Butenoic acid, 2-methyl-, 7[[2, 3-dihydroxy-2-(1-meth- oxyethyl)-3-methyl-1-oxobutoxy]methyl]-2,3,5, 7a-tetrahydro-1H- pyrrolizine-1yl ester, [1S-[1- alpha(Z),7(2S*,3R*), 7a-alpha]]-	303344		U143	10

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Butyl acetate iso-Butyl acetate sec-Butyl acetate tert-Butyl acetate	123864 110190 105464 540885			5000
n-Butyl alcohol (I)	71363		U031	5000
Butylamine iso-Butylamine sec-Butylamine tert-Butylamine	109739 78819 513495 13952846 75649			1000
Butyl benzyl phthalate	85687			100
n-Butyl phthalate	84742		U069	10
Butyric acid iso Butyric acid	107926 79312			5000
Cacodylic acid	75605		U136	1
Cadmium++2^{+}	7440439			10
Cadmium acetate	543908			10
Cadmium bromide	7789426			10
Cadmium chloride	10108642			10
Cadmium oxide	1306190	100/10000		1
Cadmium stearate	2223930	1000/10000		1
Calcium arsenate	7778441	500/10000		1
Calcium arsenite	52740166			1
Calcium carbide	75207			10
Calcium chromate	13765190		U032	10
Calcium cyanide Ca(CN)2	592018		P0221	10
Calcium dodecylbenzenesulfonate	26264062			1000
Calcium hypochlorite	7778543			10
Camphechlor	8001352	500/10000		1
Camphene, octachloro-	8001352		P123	1
Cantharidin	56257	100/10000		1
Carbachol chloride	51832	500/10000		1
Captan	133062			10
Carbamic acid, ethyl ester	51796		U238	100
Carbamic acid, methylnitroso-, ethyl ester	615532		U178	1
Carbamic acid, Methyl-, 0-(((2,4-Dimethyl-1, 3-Dithiolan-2-yl)Methyliene)Amino)-	26419738	100/10000		1

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Carbamic chloride, dimethyl-	79447		U097	1
Carbamodithioic acid, 1,2-ethaneiylbis, salts & esters	111546		U114	5000
Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester	2303164		U062	100
Carbaryl	63252			100
Carbofuran	1563662	10/10000		10
Carbon disulfide	75150	10000		P022
Carbon oxyfluoride (R,T)	353504		U033	1000
Carbon tetrachloride	56235		U211	10
Carbonic acid, dithallium(1+)salt	6533739		U215	100
Carbonic dichloride	75445		P095	10
Carbonic difluoride	353504		U033	1000
Carbonochloridic acid, methyl ester	79221		U156	1000
Carbophenothion	786196	500		1
Chloral	75876		U034	5000
Chlorambucil	305033		U035	10
Chlordane	57749	1000	U036	1
Chlordane, alpha & gamma isomers	57749		U036	1
Chlordane, technical	57749		U036	1
Chlorfenvinfos	470906	500		1
Chlorine	7782505	100		10
Chlormephos	24934916	500		1
Chlormequat chloride	999815	100/10000		1
Chlornaphazine	494031		U026	100
Chloroacetaldehyde	107200		P023	1000
Chloroacetic acid	79118	100/10000		1
p-Chloroaniline	106478		P024	1000
Chlorobenzene	108907		U037	100
Chlorobenzilate	510156		U038	10
p-Chloro-m-cresol	59507		U039	5000
Chlorodibromomethane	124481			100
Chloroethane	75003			100
Chloroethanol	107073	500		1
Chlorethyl chlorofomate	627112	1000		1
2-Chloroethyl vinyl ether	110758		U042	1000
Chloroform	67663	10000	U044	10

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Chloromethyl ether	542881	100		1
Chloromethyl methyl ether	107302	100	U046	10
beta-Chloronaphthalene	91587		U047	5000
2-Chloronaphthalene	91587		U047	5000
Chlorophacinone	3691358	100/10000		1
o-Chlorophenol (2)	95578		U048	100
4-Chlorophenol phenyl ether	7005723			5000
1-(o-Chlorophenyl)thiourea	5344821		P026	100
3-Chloropropionitrile	542767		P027	1000
Chlorosulfonic acid	7790945			1000
4-Chloro-o-toluidine, hydrochloride	3165933		U049	100
Chlorphyrifos	2921882			1
Chloroxuron	1982474	500/10000		1
Chlorthiophos	21923239	500		1
Chromic acetate	1066304			1000
Chromic acide	11115745 7738945			10
Chromic acid H_2CrO_4, calcium salt	13765190		U032	10
Chromic chloride	10025737	1/10000		1
Chromic sulfate	10101538			1000
Chromium++	7440473			5000
Chromous chloride	10049055			1000
Chrysene	218019		U050	100
Colbalt, ((2,2'-(1,2-ethanediylbis (Nitrilomethylidyne)) Bis(6-fluoro-phenolato))(2-)-N,N',O,O')-,	62207765	100/10000		1
Cobaltous bromide	7789437			1000
Colbalt carabonyl	10210681	10/10000		1
Cobaltous formate	544183			1000
Colbaltous sulfamate	14017415			1000
Coke Oven Emissions	NA			1
Colchicine	64868	10/10000		1
Copper cyanide	544923		P029	10
Coumaphos	56724	100/10000		10
Coumatetralyl	5836293	500/10000		1
Creosote	8001589		U051	1

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Cresol(s) m-Cresol o-Cresol p-Cresol	1319773 108394 95487 106445	1000/10000	U052	1000 1000
Cresylic acid m-Cresol o-Cresol p-Cresol	1319773 108394 95487 106445		U052	1000
Crimidine	535897	100/10000		1
Crotonaldehyde	123739 4170303	1000 100	u053	100 100
Cumene (I)	98828		U055	5000
Cupric acetate	142712			100
Cupric acetoarsenite	12002038			1
Cupric chloride	7447394			10
Cuprice nitrae	3251238			100
Cupric oxalate	5893663			100
Cupric sulfate	7758987			10
Cupric sultate, ammoniated	10380297			100
Cupric tartrate	815827			100
Cyanides (soluble salts and complexes) not otherwise specified	57125		P030	10
Cyanogen	460195		P031	100
Cyanogen bromide	506683	500/10000	U246	1000
Cyanogen chloride	506774		P033	10
Cyanogen iodide	506785	1000/10000		1
Cyanophos	2636262	1000		1
Cyanuric fluoride	675149	100		1
2,5-Cyclohexadiene-1,4-dione	106514		U197	10
Cyclohexane (I)	110827		U056	1000
Cyclohexane, 1,2,3,4,5,6-hexachloro, (1-alpha, 2-alpha, 3-beta, 4-alpha, 5-alpha, 6-beta)-	58899		U129	1
Cyclohexanone (I)	108941		Y057	5000
2Cyclohexanone	131895		P034	100
Cycloheximide	66819	100/10000		1
Cyclohexylamine	108918	10000		1
1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	77474		U130	10

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Cyclophosphamide	50180		U058	10
2,4-D Acid	94757		U240	100
2,4-D Ester	94111 94791 94804 1320189 1928387 1928616 1929733 2971382 25168267 53467111			100
2,4-D, salts & esters	94757		U240	100
Daunomycin	20830813		U059	10
Decarborane(14)	17702419	500/10000		1
Demeton	8065483	500		1
Demeton-S-Methyl	919868	500		1
DDD, 4,4'DDD	72548		U060	1
DDD, 4,4'DDE	72559			1
DDT, 4,4'DDT	50293		U061	1
Diallate	2303164		U062	100
Dialifor	10311849	100/10000		1
Diazinon	333415			1
Dibenz[a,h]anthracene	53703		U063	1
1,2:5,6-Dibenzanthracene	53703		U063	1
Dibenzo[a,h]anthracene			U063	1
Dibenz[a,i]pyrene	189559		U064	10
1,2-Dibromo-3-chloropropane	96128		U066	1
Diborane	19287457	100		1
Dibutyl phthalate	84742		U069	10
Di-n-butyl phthalate	84742		U069	10
Dicamba	1918009			1000
Dichlobenil	119456			100
Dichlone	117806			1
Dichlorobenzene	25321226			100
m-Dichlorobenzene (1,3)	541731		U071	100
o-Dichlorobenzene (1,2)	95501		U070	100
p-Dichlorobenzene (1,4)	106467		U072	100
3,3'-Dichlorobenzidine	91941		U073	1

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Dichlorobromomethane	75274			5000
1,4-Dichloro-2-butene (I,T)	764410		U074	1
Dichloroifluoromethane	75718		U075	5000
1,1-Dichloroethane	75343		U076	1000
1,2-Dichloroethane	107062		U077	100
1,1-Dichloroethylene	75354		U078	100
1,2-Dichloroethylene	156605		U079	1000
Dichloroethyl ether	11444	10000	U025	10
Dichloroisopropyl ether	108601		U027	1000
Dichloromethoxy ethane	111911		U024	1000
Dichloromethyl ether	542881		P016	10
Dichloromethylphenylsilane	149746	1000		1
2,4-Dichlorophenol	120832		U081	100
2,6-Dichlorophenol	87650		U082	100
Dichlorophenylarsine	696286		P036	1
Dichloropropane 1,1-Dichloropropane 1,3-Dichloropropane	26638197 78999 142289			1000
1,2-Dichloropropane	78875		U083	1000
Dichloropropane-Dichloropropene (mixture)	8003198			100
Dichloropropene 2,3-Dichloropropene	26952238 78886			100
1,3-Dichloropropene	542756		U084	100
2,2-Dichloropropionic acid	75990			5000
Dichlorvos	62737	1000		100
Dicofol	115322			10
Dicrotophos	141662	100		1
Dieldrin	60571		P037	1
1,2:3,4-Diepoxybutane (I,T)	1464535	500	U085	10
Diethyl chlorophospate	814493	500		1
Diethylamine	109897			100
Diethylarsine	692422		P038	1
Diethylcarbmazine citrate	1642542	100/10000		1
1,4-Diethylenedioxide	123911		U108	100
Diethylhexyl phthalate	117817		U028	100
N,n'-Diethylhydrazine	1615801		U086	10

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
O,O-Diethyl S-methyl dithiophosphate	3288582		U087	5000
Diethyl-p-nitrophenyl phosphate	311455		P041	100
Diethyl phthalate	84662		P088	1000
O,O-Diethyl O-pyrazinyl phosphorothioate	297972		P040	100
Diethylstilbestrol	56531		U089	1
Digitoxin	71636	100/10000		1
Diglycidyl Ether	2238075	1000		1
Digoxin	20830755	10/1000		1
Dihydrosafrole	94586		U090	10
Diisopropylfluorophosphate, 1,2,3,4, 10,10-10-hexa-chloro-1,4,4a,5,8, 8a-hexahydro-(1-alpha, 4-alpha, 4-beta, 5-alpha, 8-alpha,	309002		U004	1
8a-beta)1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5, 8,8a-hexahydro, (1-alpha, 4-alpha, 4a-beta, 5a-beta, 8-beta,	465736		P060	1
8a-beta)-2,7:3,6-Dimethanonaphth[2,3 b]oxirene,3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1a-alph, 2-beta, 2a-alpha, 3-beta, 6-beta,	60571		P037	1
6a-alpha, 7beta, 7aalpha)-2,7:3,6 Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a, 3,6,6a,7,7a-octa-hydro-, (1a-alpha, 2-beta, 2a-beta, 3-alpha, 6-alpha,	72206		P051	1
6a-beta, 7-beta, 7a-alpha)-Dimethoate	60515		P044	10
3,3'-Dimethoxybenzidine	119904		U091	100
Dimefox	115264	500		1
Dimethoate	60515	500/10000		10
Dimethyl Phosphorochloridothioate	2524030	500		1
Dimethyl sulfate	77781	500		1
Dimethyl sulfide	75183	100		1
Dimethylamine (I)	124403		U092	1000
p-Dimethylaminoazobenzene	60117		U093	10
7,12-Dimethylbenz[a]anthracene	57976		U094	1

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
3,3'Dimethylbenzidine	119937		U095	10
alpha, alpha-Dimethylbenzylhydroperoxide (R)	80159		U096	10
Dimethylcarbamoyl chloride	79447		U097	1
Dimethyldichlorosilane	75785	500		1
1,1-Dimethylhydrazine	57147	1000	U098	1
1,2-Dimethylhydrazine	540738		U099	1
alpha, alph-Dimethylphenethylamine	122098		P046	5000
Dimethyl-p-phenylenediamine	99989	10/10000		1
2,4-Dimethylphenol	105679			100
Dimethyl phthalate	131113		U102	5000
Dimethyl sulfate	77781		U103	100
Dimetilian	644644	500/10000		1
Dinitrobenzene (mixed) m-Dinitrobenzene o-Dinitrobenzene p-Dinitrobenzene	25154545 99650 528290 100254			100
4,6-Dinitro-o-cresol and salts	534521	10/10000	P047	10
Dinitrophenol 2,5-Dinitrophenol 2,6-Dinitrophenol	25550587 329715 573568			10
2,4-Dinitrophenol	51285		P048	10
Dinitrotoluene 3,4-Dinitrotoluene	25321146 610399			10
2,4-Dinitrotoluene	121142		U105	10
2,6-Dinitrotoluene	606202		U106	100
Dinoseb	88857	10/10000	P020	1000
Dinoterb	1420071	500/10000		1
Di-n-octyl phthalate	117840		U107	5000
1,4-Dioxane	123911		U108	100
Dioxathion	78342	500		1
Diphacinone	82666	10/10000		1
1,2-Diphenylhydrazine	122667		U109	10
Disphosphoramide, octamethyl-	152169	100	P085	100
Diphosphoric acid, tetraethyl ester	107493		P111	10
Dipropylamine	142847		U110	5000
Di-n-propylnitrosamine	621647		U111	10
Diquat	85007 2764729			1000

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Disulfoton	298044	500	P039	1
Dithiazanine iodine	514738	500/10000		1
Dithiobiuret	541537	100/10000	P049	100
Diuron	330541			100
Dodecylbenzenesulfonic acid	27176870			1000
Emetine, Dihydrochloride	316427	1/10000		1
Endosulfan	115297	10/10000	P050	1
alpha-Endosulfan	959988			1
beta-Endosulfan	33213659			1
Endosulfant sulfate	1031078			1
Endothall	145733		P088	1000
Endothion	2778043	500/10000		1
Endrin	72208	500/1000	P051	1
Endrin aldehyde	742934			1
Endrin & metabolites	72208		P051	1
Epichlorohydrin	106898	1000	U041	1000
Epinephrine	51434		P042	1000
EPN	2104645	100/10000		1
Ergocalciferol	50146	1000/10000		1
Ergotamine tartrate	379793	500/10000		1
Ethanal	75070		U001	1000
Ethanamine, N-ethyl-N-nitroso-	55185		U174	1
1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-	91805		U155	5000
Ethane, 1,2-dibromo-	106934		U067	1
Ethane, 1,1-dichloro-	75343		U076	1000
Ethane, 1,2-dichloro-	107062		U077	100
Ethanedinitrile	460195		P031	100
Ethane, hexachloro-67721		U131	100	
Ethane, 1,1'-[methylenebis(oxy)] bis(2-chloro-	111911		U024	1000
Ethane, 1,1'-oxybis-	60297		U117	100
Ethane, 1,1'-oxybis(2-chloro-	111444		U025	10
Ethane, pentachloro-	76017		U184	10
Ethanesulfonyl chloride, 2-chloro	1622328	500		1
Ethane, 1,1,1,2-tetrachloro-	630206		U208	100
Ethane, 1,1,2,2-tetrachloro-	79345		U209	100
Ethanethioamide	62555		U218	10

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Ethane, 1,1,1-trichloro-	71556		U226	1000
Ethane, 1,1,2-trichloro-	79005		U227	100
Ethanimidothioic acid, N-[[(methylamino) carbonyl]oxy]-, methyl ester	16752775		P066	100
Ethanol, 1,2-Dichloro-, acetate	10140871	1000		1
Ethanol, 2-ethoxy-	110805		U359	1000
Ethanol, 2,2'-(nitrosoimino)bis-	1116547		U173	1
Ethanone, 1-phenyl-	98862		U004	5000
Ethene, chloro-	75014		U043	1
Ethene, 2-chloroethoxy-	110758		U042	1000
Ethene, 1,1-dichloro-	75354		U078	100
Ethene, 1,2-dichloro- (E)	156605		U079	1000
Ethene, tetrachloro-	127184		U210	100
Ethene, trichloro-	79016		U228	100
Ethion	563122	1000		10
Ethoprophos	13194484	1000		1
Ethyl acetate (I)	141786		U112	5000
Ethyl acrylate (I)	140885		U113	1000
Ethylbenzene	100414			1000
Ethylbis(2-Chloroethyl)amine	538078	500		1
Ethyl carbamate (urethane)	51796		U238	100
Ethyl cyanide	107120		P101	10
Ethylenebisdithiocarbamic acid, salts & esters	111546		U114	5000
Ethylenediamine	107153			5000
Ethylenediamine-tetraacetic acid (EDTA)	60004			5000
Ethylene dibromide	106934		U067	1
Ethylene dichloride	107062		U077	100
Ethylene fluorohydrin	371620	10		1
Ethylene glycol monoethyl ether	110805		U359	1000
Ethylene oxide (I,T)	75218	1000	U115	10
Ethylenediamine	107153	10000		5000
Ethylenethiourea	96457		U116	10
Ethylenimine	151564	500	P054	1
Ethyl ether (I)	60297		U117	100
Ethylthiocyanate	542905	10000		1

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Ethylidene dichloride	75343		U076	1000
Ethyl methacrylate	97632		U118	1000
Ethyl methanesulfonate	62500		U119	1
Famphur	52857		P097	1000
Fenamiphos	22224926	10/10000		1
Fenitrothian	122145	500		1
Fensulfothion	115902	500		1
Ferric ammonium citrate	1185575			1000
Ferric ammonium oxalate	2944674 55488874			1000
Ferric chloride	7705080			100
Ferric fluoride	7783508			1000
Ferric nitrate	10421484			1000
Ferric sulfate	10028225			1000
Ferrous ammonium sulfate	10045893			1000
Ferrous chloride	7758943			100
Ferrous sulfate	7720787 7782630			1000
Fluentil	4301502	100/10000		1
Fluoranthene	206440		U120	100
Fluorene	86737			5000
Fluorine	7782414	500	P056	10
Fluoroacentamide	640197	100/10000	P057	100
Fluoracetic acid	144490	10/10000		1
Fluoroacetic acid, sodium salt	62786		P058	10
Fluoroacetyl chloride	359068	10		1
Fluorouracil	51218	500/10000		1
Fonofos	944229	500		1
Formaldehyde	50000	500	U122	100
Formaldehyde cyanohydrin	107164	1000		1
Formetanate hydrochloride	23422539	500/10000		1
Formothion	2540821	100		1
Formparanate	17702577	100/10000		1
Formic acid (C,T)	64186		U123	5000
Fosthietan	21548323	500		1
Fuberidazole	3878191	100/10000		1
Fulminic acid, mercury(2) salt (R,T)	628864		P065	10
Fumaric acid	110178			5000

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Furan (I)	110009	500	U124	100. 100
Furan, tetrahydro- (I)	109999		U213	1000
2-Furancarboxaldehyde (I)	98011		U125	5000
2,5-Furandione	108316		U147	5000
Furfural (I)	98011		U125	5000
Furfuran (I)	110009		U124	100
Gallium trichloride	13450903	500/10000		1
Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-	18883664		U206	1
D-Glucose, 2-deoxy-2-[[(methylnitrosoamino)-carbonyl]amino]-	18883664		U206	1
Glycidylaldehyde	765344		U126	10
Guanidine, N-methyl-N'-nitro-N-nitroso-	70257		U163	10
Guthion	86500			1
Heptachlor	76448		P059	1
Heptachlor epoxide	1024573			1
Hexachlorobenzene	118741		U127	10
Hexachlorobutadiene	87683		U128	1
Hexachlorocyclohexane (gamma isomer)	58899		U129	1
Hexachlorocyclopentadiene	77474	100	U130	10
Hexachloroethane	67721		U131	100
Hexachlorophene	70304		U132	100
Hexachloropropene	1888717		U243	1000
Hexaethyl tetraphosphate	757584		P062	100
Hexamethylenediamine, N,N'-Dibutyl	4835114	500		1
Hydrazine (R,T)	302012	1000	U133	1
Hydrazine, 1,2-diethyl-	1615801		U086	10
Hydrazine, 1,1-dimethyl-	57147		U098	10
Hydrazine, 1,2-dimethyl-	540738		U099	1
Hydrazine, 1,2-diphenyl-	122667		U109	10
Hydrazine, methyl-	60344		P068	10
Hydrazinecarbothioamide	79196		P116	100
Hydrochloric acid	7647010			5000

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Hydrocyanic acid	74908	100	P063	10
Hydrofluoric acid	7664393		U134	100
Hydrogen chloride (gas only)	7647010	500		5000
Hydrogen cyanide	74908		P063	10
Hydrogen fluoride	7664393	100	U134	100
Hydrogen peroxide (Conc> 52%	7722841	1000		1
Hydrogen selenide	7783075	10		1
Hydrogen sulfide	7783064	500	U135	100
Hydroperoxide, 1-methyl-1-phenylethyl-	80159		U096	10
Hydroquinone	123319	500/10000		1
2-Imidazoliainethione	96457		U116	10
Indeno(1,2,3-cd)pyrene	193395		U137	100
Iron, Pentacarbonyl-	13463406	100		1
Isobenzan	297789	100/10000		1
1,3-Isobenzofurandione	85449		U190	5000
Isobutyronitrile	78820	1000		1
Isobutyl alcohol (I,T)	78831		U140	5000
Isocyanic acid, 3,4-Dichlorophenyl ester	102363	500/10000		1
Isodrin	465736	100/10000	P060	1
Isofluorphate	55914	100		100
Isophorone	78591			5000
Isophorone Diisocyanbate	4098719	100		1
Isoprene	78795			100
Isopropanolamine dodecylbenzene sulfonate	42504461			1000
Isopropyl chloroformate	108236	1000		1
Isopropyl formate	625558	500		1
Isoproplymethylpryrazolyl dimethylcarbamate	119380	500		1
Isosafrole	120581		U141	100
3(2H)-Isoxazolone, 5-(aminomethyl)-	2763964		P007	1000
Kepone	143500		U142	1
Lactonitrile	78977	1000		1
Lasiocarpine	303344		U143	10
Lead acetate	301042		U144	#

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Lead arsenate	7784409 7645252 10102484			1
Lead, bis(acetato-O)tetrahydroxytri	1335326		U146	100
Lead chloride	7758954			100
Lead fluoborate	13814965			100
Lead iodide	10101630			100
Lead nitrate	10099748			100
Lead phosphate	7446277		U145	#
Leat stearate	7428480 1072351 52652592 56189094			5000#
Lead subacetate	1335326		U146	100
Lead sulfate	15739807 7446142			100
Lead sulfide	1314870			5000#
Lead thiocyanate	592870			100
Leptophos	21609905	500/10000		1
Lewisite	541253	10		1
Lindane	58899	1000/10000	U129	1
Lithium chromate	14307358			10
Lithium hydride	7580678	100		1
Malathion	121755			100
Maleic acid	110167			5000
Maleic anhydride	108316		U147	5000
Maleic hydrazide	123331		U148	5000
Malononitrile	109773	500/10000	U149	1000
Manganese, tricarbonyl methylcyclopentadienyl	12108133	100		1
Mechlorethamine	51752	10		1
Melphalan	148823		U150	1
Mephosfolan	950107	500		1
Mercaptodimethur	2032657			10
Mercuric acetate	1600277	500/10000		1
Mercuric chloride	747947	500/10000		1
Mercuric cyanide	592041			1
Mercuric nitrate	10045940			10

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Mercuric oxide	21908532	500/10000		!
Mercuric sulfate	7783359			10
Mercuric thiocyanate	592858			10
Mercurous nitrate	10415755 7782867			10
Mercury	7439976		U151	1
Mercury (acetate-O)phenyl-	62384		P092	100
Mercury fulminate	628864		P065	10
Methacrolein diacetate	10476956	1000		1
Methacrylic anhydride	760930	500		1
Methacrylonitrile (I,T)	126987	500		U152
Methacryloyl chloride	920467	100		1
Methacryloyloxyethyl isocyanate	30674807	100		1
Methamidophos	10265926	100/10000		1
Methanamine, N-methyl-	124403		U092	1000
Methanamine, N-methyl-N-nitroso-	62759		P082	10
Methane, bromo-	74839		U029	1000
Methane, chloro- (I,T)	74873		U045	100
Methane, chloromethoxy-	107302		U046	10
Methane, dibromo-	74953		U068	1000
Methane, dichloro-	75092		U080	1000
Methane, dichlorodifluoro-	75718		U075	5000
Methane, iodo-	74884		U138	100
Methane, isocyanato-	624839		P064	##
Methane, oxybis(chloro-	542881		P016	10
Methanesulfenyl chloride, trichloro-	594423		P118	100
Methanesulfonyl fluoride	558258	1000		1
Methanesulfonic acid, ethyl ester	62500		U119	1
Methane, tetrachloro-	56235		U211	10
Methane, tetranitro- (R)	509148		P112	10
Methane, tribromo-	75252		U225	100
Methane, trichloro-	67663		U044	10
Methane, trichlorofluoro-	75694		U121	5000
Methanethiol (I,T)	74931		U153	100
6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexa-chloro-1,5,5a, 6,9,9a-hexahydro-, 3-oxide	115297		P050	1

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
1,3,4-Metheno-2H-cyclobutal[cd] pentalen-2-one,1,1a,3,3a,4, 5,5a,5b,6-decachlorocatahydro-	143500		U142	1
4,7-Methano-1H-indene, 1,4,5,6,7,8,8 heptachloro-3a, 4,7,7a-tetrahydro-	76448		P059	1
4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8 octachloro-2,3, 3a,4,7,7a-hexahydro-	57749		U036	1
Methanol (I)	67561		U154	5000
Methapyrilene	91805		U155	5000
Methidathion	950378	500/10000		1
Methiocarb	2032657	500/10000		10
Methomyl	16752775	500/10000	P066	100
Methoxychlor	72435		Y247	1
Methoxyethylmercuric acetate	151382	500/10000		1
Methyl alcohol (I)	67561		U154	5000
Methyl bromide	74839	1000	U029	1000
1-Methylbutadiene (I)	504609		U186	100
Methyl chloride (I,T)	74873		U045	100
Methyl 2-chloroacrylate	80637	500		1
Methyl chlorocarbonate (I,T)	79221		U156	1000
Methyl chloroform	71556		U226	1000
Methyl chloroformate	79221	500	U156	1000
Methyl disulfide	624920	100		
3-Methylcholanthrene	56495		U157	10
4,4'-Methylenebis(2-chloroaniline)	101144		U158	10
Methylene bromide	74953		U068	1000
Methylene chloride	75092		U080	1000
Methyl ethyl ketone (MEK) (I,T)	78933		U159	5000
Methyl ethyl ketone peroxide (R,T)	1338234		U160	10
Methyl hydrazine	60344	500	P068	10
Methyl iodide	74884		U138	100
Methyl isobutyl ketone	108101		U161	5000
Methyl isocyanate	624839	500	P064	##

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Methyl isothiocyante	556616	500		1
2-Methyllactonitrile	75865		P069	10
Methyl mercaptan	74931	500	U153	100
Methyl methacrylate (I,T)	80626		U162	1000
Methyl parathion	298000		P071	100
Methyl phenkapton	3735237	500		1
Methyl phosphoric dichloride	676971	100		1
4-Methyl-2-pentanone (I)	108101		U161	5000
Methyl thiocyanate	556649	10000		1
Methylthiouracil	56042		U164	10
Methyl vinyl ketone	78944	10		1
Methylmercuric dicyanamide	502396	500/10000		1
Methyltrichlorosilane	75796	500		1
Metolcarb	1129415	100/10000		1
Mevinphos	7786347	500		10
Mexacarbate	315184	500/10000		1000
Mitomycin C	50077	500/10000	U010	10
MNNG	70257		U163	10
Monocrotophos	6923224	10/10000		1
Monoethylamine	75047			100
Monomethylamine	73895			100
Muscimol	2763964	10000	P007	1000
Mustard gas	505602	500		1
Naled	300765			10
5,12-Naphthaacenedione, 8-acetyl-10-[3 amino-2,3,6-tri-deoxy-alpha-L-lyxo-hexopyranosyl)-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-	20830813		U059	10
1-Naphthalenamine	134327		U167	100
2-Naphthalenamine	91598		U169	10
Naphthalenamine, N,N'-bis(2-chloroethyl)-	494031		U026	100
Naphthalene, 2-chloro-	91587		U047	5000
1,4-Naphthalenedione	130154		U166	5000

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
2,7-Naphthalenedisulfonic acid, 3,3' [(3,3'-dimethyl-(1,1'-biphenyl)-4,4'-dryl)-bis(azo)]bis(5-amino-4-hydroxy)-tetrasodium salt	72571		U236	10
Naphthenic acid	1338245			100
1,4-Naphthoquinone	130154		U166	5000
alpha-Naphthylamine	134327		U167	100
beta-Naphthylamine	91598		U168	10
alpha-Naphthylthiourea	86884		P072	100
Nickel++	7440020			100
Nickel ammonium sulfate	15699180			100
Nickel carbonyl	13463393	1	P073	10
Nickel carbonyl Ni(CO)4, (T-4)-	13463393		P073	10
Nickel chloride	7718549 37211055			100
Nickel cyanide	557197		P074	10
Nickel hydroxide	12054487			10
Nickel nitrate	14216752			100
Nickel sulfate	7786814			100
Nicotine & salts	54115	100	P075	100
Nicotine sulfate	65305	100/10000		1
Nitric acid	7697372	1000		1000
Nitric acid, thallium(1+) salt	10102451		U217	100
Nitric oxide	10102439	100	P076	10
p-Nitroaniline	100016		P077	5000
Nitrobenzene (I,T)	98953	10000	U169	1000
Nitrocyclohexane	1122607	500		1
Nitrogen dioxide	10102440 10544726	100	P078	10
Nitrogen oxide	10102439		P076	10
Nitroglycenne	55630		P981	10
Nitrophenol (mixed m-Nitrophenol o-Nitrophenol (2) p-Nitrophenol (4)	25154556 554847 88755 100027		 U170	100 100 100 100
2-Nitropropane (I,T)	96469		U171	10
N-Nitrosodi-n-butylamine	924163		U172	10
N-Nitrosodiethanolamine	1116547		U173	1

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
N-Nitrosodiethylamine	55185		U174	1
N-Nitrosodimethylamine	62759	1000	P082	10
N-Nitrosodiphenylamine	86306			100
N-Nitroso-N-ethylurea	759739		U176	1
N-Nitroso-N-methylurea	684935		U177	1
N-Nitroso-N-methylurethane	615532		U178	1
N-Nitrosomethylvinylamine	4549400		P084	10
N-Nitrosopipendine	199754		U179	10
N-Nitrosopyrrolidine	930552		U180	1
Nitrotoluene m-Nitrotoluene o-Nitrotoluene p-Nitrotoluene	1321126 99081 88722 99990			1000
5-Nitro-o-toluidine	99558		U181	100
Norbormide	991424	100/10000		1
Octamethylpyrophosphoramide	152169		P085	100
Organorhodium complex (PMN-82-147)	0	10/10000		1
Osmium tetroxide	20816120		P087	1000
Ouabain	630604	100/10000		1
7-Oxabicyclo[2.2.1]heptane-s,3-dicarboxylic acide	145733		P088	1000
Oxamyl	23135220	100/10000		1
1,2-Oxathiolane, 2,2-dioxide	1120714		U193	10
2H-1,3,2-Oxazaphosphorin-2-amine, N,N bis(2-chloroethyl)tetrahydro-, 2-oxide	50180		U058	10
Oxetane, 3,3-bis(chloromethyl)-	78717	500		
Oxirane (I,T)	75218		U115	10
Oxiranecarboxyaldehyde	765344		U126	10
Oxirane, (chloromethyl)-	106898		U041	100
Oxydisulfoton	2497076	500		1
Ozone	10028156	100		1
Paraformaldehyde	30525894			1000
Paraldehyde	123637		U182	1000
Paraquat	1910425	10/10000		1
Paraquat methosulfate	2074502	10/10000		1

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Parathion	56382	100	P089	10
Parathion-methyl	298000	100/10000		100
Paris green	12002038	500/10000		100
Pentaborane	19624227	500		1
Pentachlorobenzene	608935		U183	10
Pentachlorethane	76017		U184	10
Pentachlorophenol	87865		U242	10
Pentachloronitrobenzene (PCNB)	82688		U185	100
Pentadecylamine	2570265	100/10000		1
Peracetic acid	79210	500		1
1,3-Pentadiene (I)	504609		U186	100
Perachloroethylene	127184		U210	100
Perchloromethylmercaptan	594423	500		100
Phenacetin	62442		U187	100
Phenanthrene	85018			5000
Phenol	108952	500/10000	U188	1000
Phenol, 2-chloro-	95578		U048	100
Phenol, 4-chloro-3-methyl-	59507		U039	5000
Phenol, 2-cyclohexyl-4,6-dinitro-	131895		P034	100
Phenol, 2,4-dichloro	120832		U081	100
Phenol, 2,6-dichloro-	87650		U082	100
Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)	56531		U089	1
Phenol, 2,4-dimethyl-	105679		U&101	100
Phenol, 2,4-dinitro-	51285		P048	10
Phenol, methyl- m-Cresol o-Cresol p-Cresol	1319773 108394 95487 106445		U052	1000
Phenol, 2-methyl-4,6-dinitro-	534521		P047	10
Phenol, 2,2'-methylenebis[3,4,6-trichloro-	70304		U132	100
Phenol, 2,2'-thiobis(4,6-dichloro-	97187	100/10000		1
Phenol, 2,2'-thiobis(4-chloro-6-methyl)-	4418660	10/10000		1
Phenol, 2-(1-methylpropyl)-4,6-dinitro	88857		P020	1000
Phenol, 3-(1-methylethyl)-, methylcarbamate	64006	500/10000		1

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Phenol, 4-nitro-	100027		U170	100
Phenol, pentachloro-	87865		U242	10
Phenol, 2,3,4,6-tetrachloro-	58902		U212	10
Phenol, 2,4,5-trichloro-	95954		U230	10
Phenol, 2,4,6-trichloro-	88062		U231	10
Phenol, 2,4,6-trinitro-, ammonium salt	131748		P009	10
Phenoxarsine, 10,10'-oxydi-	58366	500/10000		1
L-Phenylalanine, 4-[bis(2-chloroethyl) aminol]	148823		U150	1
Phenyl dichloroarsine	696286	500		1
1,10-(1,2-Phenylene)pyrene	193395		U137	100
Phenylhydrazine hydrochloride	59881	1000/10000		1
Phenylmercury acetate	62384	500/10000	P092	100
Phenylsilatrane	2097190	100/10000		1
Phenylthiourea	103855	100/1000	p)93	100
Phorate	298022	10	P094	1010
Phosacetim	4104147	100/10000		1
Phosfolan	947024	100/10000		1
Phosgene	75445	10	P095	10
Phosmet	732116	10/10000		1
Phosphamidon	13171216	100		1
Phosphine	7803512	500		100
Phosphonothioic acid, methyl-, o-ethyl o-(4-(methylthio)phenyl) ester	2703131	500		1
Phosphonothioic acid, methyl-, s-(2-(bis(1- methylethyl)amino) ethyl o-ethyl ester	50782699	100		1
Phosphonothioic acid, methyl-, 0-(4-nitrophenyl) o-phenyl ester	2665307	500		1
Phosphoric acid	7664382			5000
Phosphoric acid, diethyl 4-nitrophenyl ester	311455		P041	100
Phosphoric acid, dimethyl 4-(methylthio) phenyl ester	3254635	500		1
Phosphoric acid, lead(2+) salt (2:3)	7446277	500	U145	#
Phosphorodithioic acid, O,O-diethyl S-[2(ethylthio)ethyl]ester	298044		P039	1

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Phosphorodithioic acid, O,O-diethyl S(ethylthio), methyl ester	298022		P094	10
Phosphorodithioic acid, O,O-diethyl S-methyl ester	3288582		U087	5000
Phosphorodithoic acid, O,O-dimethyl S-[2(methyl-amino)-2-oxoethyl] ester	60515		P044	10
Phosphorofluondic acid, bis(1-methylethyl)ester	55914		P043	100
Phsphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester	56382		P089	10
Phosphorothioic acid, O,[4[(dimethylamino)sulfonyl]phenyl]O,O-dimethyl ester	52857		P097	1000
Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester	298000		P071	100
Phosphorus	7723140	100		1
Phosphorus oxycloride	10025873	500		1000
Phosphorous pentachloride	10026138	500		1
Phosphorus pentasulfide (R)	1314803		U189	100
Phosphorus pentoxide	1314563	10		1
Phosphorus trichloride	7719122	1000		1000
Phthalic anhydride	85449		U190	5000
Physostigmine	57476	100/10000		1
Phosostigmine, salicylate (1:1)	57647	100/10000		1
2-Picoline	109068		U191	5000
Picotoxin	124878	500/10000		1
Piperidine	110894	1000		1
Piperidine, 1-nitroso-	100754		U179	10
Piprotal	5281130	100/10000		1
Primifos-ethyl	23505411	1000		1
Plumbane, tetraethyl-	78002		P110	10
Polychlorinated biphenyls (PCBs) (See Aroclor)	1336363			1
Potasium arsenate	7784410			1
Potassium arsenite	10124502	500/10000		1000
Potassium bichromate	7778509			10
Potassium chromate	7789006			10

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Potassium cyanide	151508	100	P098	10
Potassium hydroxide	1310583			1000
Potassium permanganate	7722647			100
Potassium silver cyanide	506516	500	P099	1
Promecarb	2631370	500/10000		1
Pronamide	23950585		U192	5000
Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl] oxime	116063		P070	1
1-Propanamine (I,T)	107108		U194	5000
1-Propanamine, N-propyl-	142847		U110	5000
1-Propanamine, N-nitroso-N-proply-	621647		U111	10
Propane, 1,2-dibromo-2-chloro	96128		U066	1
Propane, 2-intro- (I,T)	79469		U171	10
1,3-Propane sultone	1120714		U193	10
Propane 1,2-dichloro-	78875		U083	1000
Propanedinitrile	109773		U149	100
Propanenitrile	107120		P101	10
Propanenitrile, 2-chloro-	542767		P027	1000
Propanenitrile, 2-hydroxy-2-methyl-	75865		P069	10
Propane, 2,2'-oxybis[2-chloro-	108601		U027	1000
1,2,3-Propanetnol, trinitrate- (R)	55630		P081	10
1-Propanol, 2,3-dibromo-, phosphate (3:1)	126727		U235	10
1-Propanol, 2-methyl- (I,T)	78831		U140	5000
2-Propanone (I)	67641		U002	5000
2-Propanone, 1-bromo-	598312		P017	1000
Propargite	2312358			10
Propargyl alcohol	107197		P102	1000
Propargyl bromide	106967	10		1
2-Propenal	107028		P003	1
2-Propenamide	79061		U007	5000
1-Propene, 1,1,2,3,3,3-hexachloro-	1888717		U243	1000
1-Propene, 1,3-dichloro-	542756		U084	100
2-Propenenitrile	107131		U009	100
2-Propenenitrile, 2-methyl- (I,T)	126987		U152	1000
2-Propenoic acid (I)	79107		U008	5000
2-Prepenoic acid, ethyl ester (I)	140885		U113	1000

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
2-Prepenoic acid, 2-methyl-, ethyl ester	97632		U118	1000
2-Prepenoic acid, 2-methyl-, methyl ester (I,T)	80626		U162	1000
2-Propen-1-ol	107186		P005	100
Propiolactone, beta-	57578	500		1
Propionic acid	79094			5000
Propionic acid, 2-(2,4,5-trichlorophenoxyl)-	93721		U233	100
Propionic anhydride	123626			5000
Propiolactone, beta	57578	500		1
Propionitrile	107120	500		10
Propionitrile, 3-chloro-	542767	1000		1000
Propiophenone, 4-amino	70699	100/10000		1
n-Propylamine	107108		U194	5000
Propyl chloroformate	109615	500		1
Propylene dichloride	78875		U083	1000
Propylene oxide	75569	10000		100
1,2-Propylenimine	75558	10000	P067	1
2-Propyn-1-ol	107197		P102	1000
Prothoate	2275185	100/10000		1
Pyrene	129000	1000/10000		5000
Pyrethrins	121299 121211 8003347			1
3,6-Pyridazinedione, 1,3-dihydro-	123331		U148	5000
4-Pyridinamine	504245		P008	1000
Pyridine	110861		U196	1000
Pyridine, 2-methyl-	109068		U191	5000
Pyridine, 2-methyl-5-vinyl-	140761	500		1
Pyridine, 4-amino-	504245	500/10000		1000
Pyridine, 4-nitro-, 1-oxide	1124330	500/10000		1
Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)	54115		P075	100
2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-	66751		U237	10
4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-	56042		U164	10

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Pyriminil	53558251	100/10000		1
Pyrrolidine, 1-nitroso-	930552		U180	1
Quinoline 91225			5000	
Reserpine	50555		U200	5000
Resorcinol	106463		U201	5000
Sacchann and salts	81072		U202	100
Salcomine	14167181	500/10000		1
Sarin	107448	10		1
Satrole	94597		U203	100
Selenious acid	7783008	1000/10000	U204	10
Selenious acid, dithallium (1+) salt	12039520		P114	1000
Selenium ++	7782492			100
Selenium dioxide	7446084		U204	10
Selenium oxychloride	7791233	500		1
Selenium sulfide (R,T)	7488564		U205	10
Selenourea	630104		P103	1000
Semicarbazide hydrochloride	56417	1000/10000		1
L-Senne, diazoacetate (ester)	115026		U015	1
Silane, (4-aminobutyl)diethoxymethyl-	3037727	1000		1
Silver++	7440224			1000
Silver cyanide	506649		P104	1
Silver nitrate	7761888			1
Silvex (2,4,5-TP)	93721		U233	100
Sodium	7440235			10
Sodium arsenate	7631892	1000/10000		1
Sodium arsenite	7784465	500/10000		1
Sodium azide	26628228	500	P105	1000
Sodium bichromate	10588019			10
Sodium bifluoride	1333831			100
Sodium bisulfite	7631905			5000
Sodium Cacodylate	124652	100/10000		1
Sodium chromate	7775113			10
Sodium cyanide	143339		P106	10
Sodium dodecylbenzenesulfonate	25155300			1000
Sodium fluoride	7681494			1000
Sodium fluoroacetate	62748	10/10000		10

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Sodium hydrosulfide	16721805			5000
Sodium hydroxide	1310732			1000
Sodium hypochlorite	7681529 10022705			1000
Sodium methylate	124414			1000
Sodium nitrite	763200			100
Sodium prentachlorophenate	131522	100/10000		1
Sodium phosphate, dibasic	7558794 10039324 10140655			5000
Sodium phosphate, tribasic	7601549 7758294 7785844 10101890 10124568 10361894			5000
Sodium selenate	13410010	100/10000		1
Sodium selenite	10102188 7782823	100/1000		100
Sodium tellurite	10102202	500/10000		1
Stannane, acetoxytriphenyl	900958	500/10000		1
Streptozotocin	18883664		U206	1
Strontium chromate	7789062			10
Strychnidin-1-one, 2,3-dimethoxy-	357573		P018	100
Strychnine, & salts	572494	100/10000	P018	10
Strychnine, sulfate	60413	100/10000		1
Styrene	100425			1000
Sulfotep	3689245	500		100
Sulfoxide, 3-chlorophpropyl octyl	3569571	500		1
Sulfur monochloride	12771083			1000
Sulfur dioxide	7446095	500		1
Sulfur phosphide (R)	1314803		U189	100
Sulfur tetrafluoride	7783600	100		1
Sulfur trioxide	7446119	100		1
Sulfuric acid	7664939 8014957	1000		1000
Sulfuric acid, dithallium (1^+) salt	7446186 10031591		P115	100
Sulfuric acid, dimethyl ester	77781		U103	100

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Tabun	77816	10		1
2,4,5-T acid	93765		U232	1000
2,4,5-T amines	2008460 1319728 3813147 6369966 6369977			5000
Tellurium	13494809	500/10000		1
Tellurium hexafluoride	7783804	100		1
2,4,5-T esters	93798 1928478 25168154 61792072			1000
2,4,5-T salts	13560991			1000
2,4,5-T	93765		U232	1000
TDE	72548		U060	1
TEPP	10749	100		10
Terbufos	13071799	100		1
1,2,4,5-Tetrachlorobenzene	95943		U207	5000
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746016			1
1,1,1,2-Tetrachlorethane	630206		U208	100
1,1,2,2-Tetrachloroethane	79345		U209	100
Tetrachloroethene	127184		U210	100
Tetrachloroethylene	127184		U210	100
2,3,4,6-Tetrachlorophenol	58902		U212	10
Tetraethyl lead	78002	100	P110	10
Tetraethyl pyrophosphate	107493		P111	10
Tetraethyldithiopyrophosphate	3589245		P109	100
Tetraethyltin	597648	100		1
Tetramethyllead	75741	100		1
Tetrahydrofuran (I)	109999		U213	1000
Tetranitromethane (R)	509148	500	P112	10
Tetraphosphoric acid, hexaethyl ester	757584		P062	100
Thallic oxide	1314325		P113	100
Thallium ++	7440280			1000
Thallium acetate	563688		U214	100

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Thallium carbonate	6533739		U215	100
Thallium chloride	7791120		U216	100
Thallium nitrate	10102451		U217	100
Thallium oxide	1314325		P113	100
Thallium selenite	12039520		P114	1000
Thallium sulfate	7446186 10031591	100/10000	P115	100
Thallous carbonate	6533739	100/10000		100
Thallous chloride	7791120	100/10000		100
Thallous malonate	2757188	100/10000		1
Thallous sulfate	7446186	100/10000		100
Thioacetamide	62555		U218	10
Thiocarbazide	2231574	1000/10000		1
Thiodiphosphoric acid, tetraethyl ester	3689245		P109	100
Thiofanox	39196184	100/10000	P045	100
Thioimidodicarbonic diamide [(H2N)C(S)] 2NH	541537		P049	100
Thiomethanol (I,T)	74931		U153	100
Thionazin	297972	500		100
Thioperoxydicarbonic diamide [(H2N)C(S)] 2S2, tetra-methyl-	137268		U244	10
Thiophenol	108985	500	P104	100
Thiosemicarbazide	79196	100/10000	P116	100
Thiourea	62566		U219	10
Thiourea, (2-chlorophenyl)-	5344821	100/10000	P026	100
Thiourea, (2-methylphenyl)-	614788	500/10000		1
Thiourea, 1-naphthalenyl-	86884		P072	100
Thiourea, phenyl-	103855		P093	100
Thiram	137268		U244	10
Titanium tetrachloride	7550450	100		1
Toluene	108883		U220	1000
Toluenediamine	95807 496720 823405 25376458		U221	10
Toluene diisocyanate (R,T)	584849 91087 26471625	500 100	U223	100 100

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
o-Toluidine	95534		U238	100
p-Toluidine	106490		U353	100
o-Toluidine hydrochloride	636215		U222	100
Toxaphene	8001352		P123	1
2,4,5-TP acid	93721		U233	100
2,4,5-TP esters	32534955			100
1H-1,2,4-Triazol-3-amine	61825		U011	10
Trans-1,4-dichlorobutene	110576	500		1
Triamiphos	1031476	500/10000		1
Triazofos	24017478	500		1
Trichloroacety chloride	76028	500		1
Trichlorfon	52686			100
1,2,4-Trichlorobenzene	120821			100
1,1,1-Trichloroethane	71556		U226	1000
1,1,2-Trichloroethane	79005		U227	100
Trichloroethene	79016		U228	100
Trichloroethylene	79016		U228	100
Trichloroethylsilane	115219	500		1
Trichloronate	327980	500		1
Trichloromethanesulfenyl chloride	594423		P118	100
Trichloromonofluoromethane	75694		U121	5000
2,3,4-richlorophenol	15950660			
2,3,5-Trichlorophenol	933788			
2,3,6-Trichlorophenol	933755			
2,4,5-Trichlorophenol	95954		U230	10
2,4,6-Trichlorophenol	88062		U231	10
3,4,5-Trichlorophenol	609198			
2,4,5-Trichlorophenol	95954		U230	10
2,4,6-Trichlorophenol	88062		I231	10
Trichlorphenylsilane	98135	500		1
Trichloro(chloromethyl)silane	1558254	100		1
Trichloro(dichlorophenyl)silane	27137855	500		1
Triethanolamine dodecylbenzene-sulfonate	27323417			1000
Triethoxysilane	998301	500		1
Triethylamine	121448			5000
Trimethylamine	75503			100
Trimethylchlorosilane	75774	1000		1
Trimethylolpropane phosphite	824113	100/10000		1

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Trimethyltin chloride	1066451	500/10000		1
1,3,5-Trinitrobenzene (R,T)	99354		U234	10
1,3,5-Trioxane, 2,4,6-trimethyl-	123637		U182	1000
Triphenyltin chloride	639587	500/10000		1
Tris(2-chloroethyl)amine	555771	100		1
Tris(2,3-dibromopropyl) phosphate	126727		U235	10
Trypan blue	72571		U236	10
Unlisted Hazardous Wastes Characteristic of Corrosivity	NA		D002	100
Unlisted Hazardous Wastes Characteristic:	NA			
Arsenic (D004)	NA		D004	1
Barium (D005	NA		D005	1000
Cadmium (D006	NA		D006	10
Chromium (D007)	NA		D007	10
2,4-D (D016)	NA		D016	100
Endrin (D9012)	NA		D012	1
Lead (D008)	NA		D008	
Lindane (D013)	NA		D013	1
Mercury (D009)	NA		D009	1
Metoxychlor (D014)	NA		D014	1
Selenium (D010)	NA		D010	10
Silver (D011)	NA		D011	1
Toxaphene (D015)	NA		D015	1
2,4,5-TP (D017)	NA		D017	100
Vinyl chloride (D043)	NA		D043	1
Unlisted Hazardous Wastes Characteristic of Ignitability	NA		D001	00
Unlisted Hazardous Wastes Characteristic Reactivity	NA		D003	00
Uracil mustard	66751		U237	10
Uranyl acetate	541093			100
Uranyl nitrate	10102064 36478769			100
Urea, N-ethyl-N-nitroso	759739		U176	1
Urea, N-methyl-N-nitroso	684935		U177	1
Valinomycin	2001958	1000/10000		1
Vanadic acid, ammonium salt	7803556		P119	1000
Vanadic oxide v_2O_5	1314621		P120	1000
Vanadic pentoxide	1314621		P120	1000

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Vanadium pentoxide	1314621	100/10000		1000
Vanadyl sulfate	27774136			1000
Vinyl chloride	75014		U043	1
Vinyl acetate	108054			5000
Vinyl acetate monomer	108054	1000		5000
Vinylamine, N-methyl-N-nitroso-	4549400		P084	10
Vinylidene chloride	75354		U078	100
Warfarin, & salts, when present at concentrations greater than 0.3%	81812	500/10000	p001	100
Warfarin sodium	129066	100/10000		1
Xylene (mixed) m-Benzene, dimethyl o-Benzene, dimethyl p-Benzene, dimethyl	1330207 108383 95476 106423		U239	1000
Xylenol	1300716			1000
Xylylene dichloride	28347139	100/10000		1
Yohimban-16-carboxylic acid, 11,17 dimethosy-18-[(3,4,5-trimethoxy-benzoyl)oxy]-, methyl ester (3-beta, 16-beta,17-alpha, 18-beta,20-alpha)-	50555		U200	5000
Zinc	7440666			1000
Zinc acetate	557346			1000
Zinc ammonium chloride	52628258 14639975 14639986			1000
Zinc borate	1332076			1000
Zinc bromide	7699458			1000
Zinc carbonate	3486359			1000
Zinc chloride	7646857			1000
Zinc cyanide	557211		P121	10
Zinc, dichloro(4,4-dimethyl-5(((((methylamino)carbonyl) oxy)imino)pentaenitrile)-,(t-4)-	58270089	100/1000		1
Zinc fluoride	7783495			1000
Zinc formate	557415			1000
Zinc hydrosulfite	7779864			1000
Zinc nitrate	7779886			1000
Zinc phenosulfonate	127822			5000

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
Zinc phosphide	1314847	500	P122	100
Zinc phosphide Zn_3P_2, when present at concentrations greater than 10%	1314847		P122	100
Zinc silicofluoride	16871719			5000
Zinc sulfate	7733020			1000
Zirconium nitrate	13746899			5000
Zirconium potassium fluoride	16923958			1000
Zirconium sulfate	14644612			5000
Zirconium tetrachloride	10026116			5000
F001			F001	10
The following spent halogenated solvents used in degreasing; all spent solvent mixtures/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 or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.				
(a) Tetrachlorethylene	127184		U210	100
(b) Trichloroethylene	79016		U228	100
(c) Methylene chloride	75092		U080	1000
(d) 1,1,1-Trichloroethane	71556		U226	1000
(e) Carbon tetrachloride	56235		U211	10
(f) Chlorinated fluorocarbons	NA			5000
F002			F002	10
The following spent halogenated solvents: all spent solvent mixtures/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.				
(a) Tetrachloroethylene	127184		U210	100
(b) Methylene chloride	75092		U080	1000
(c) Trichloroethylene	79016		U228	100
(d) 1,1,1-Trichloroethane	71556		U226	1000
(e) Chlorobenzene	108907		U037	100
(f) 1,1,2-Trichloro-1,2,2 trifluoroethane	76131			5000
(g) o-Dischlorobenzene				
(h) Trichlorofluoromethane	95501		U070	100
(i) 1,1,2-Trichloroethane	75694		U121	5000
	79005		U227	100

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
F003			F003	100
The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents:				
(a) Xylene	1330207			1000
(b) Acetone	67641			5000
(c) Ethyl acetate	141786			5000
(d) Ethylbenzene	100414			1000
(e) Ethyl ether	60297			100
(f) Methyl isobutyl ketone	108101			5000
(g) n-Butyl alcohol	71363			5000
(h) Cyclohexanone	108941			5000
(i) Methanol	67561			5000
F004			F004	1000
The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents:				
(a) Cresols/Cresylic acid	131773		U052	1000
(b) Nitrobenzene	98953		U169	1000
F005			F005	100
The following spent non-halogenated solvents and the still bottoms from the recovery of these solvents:				
(a) Toluene	108883		U220	1000
(b) Methyl ethyl ketone	78933		U159	5000
(c) Carbon disulfide	75150		P022	100
(d) Isobutanol	78831		U140	5000
(e) Pyndine	110861		U196	1000
F006			F006	10
Wastewater treatment sludges from electroplating operations except from the following: (1) sulfuric acid anodizing aluminum, (2) tin plating on carbon steel, (3) zinc plating (segregated basis) on carbon steel, (4) aluminum or zinc-aluminum plating on carbon steel, (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel, and (6) chemical etching and milling of aluminum.				
F007			F007	10
Spent cyanide plating bath solutions from electroplating operations.				
F008			F008	10
Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.				

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
F009			F009	10
Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.				
F010			F010	10
Quenching bath residues from oil baths from metal heat operations were cyanides are used in the process.				
F011			F011	10
Spent cyanide solution from salt bath pot cleaning from metal heat treating operations.				
F012			F012	10
Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process.				
F019			F019	10
Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive coating process.				
F020			F020	1
Waste (except wastewater and spent carbon from hydrogen chloride purification) from the production of manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri-or-tetrachlorophenol, or of intermediates used to produce their pesticide derivatives. (This listing does not include wastes from the production of hexachlorophene from highly purified 2,4,5-trichlorophenol.)				
F021			F021	1
Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives.				
F022			F022	1
Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) or tetra-, penta-, or hexachlorobenzenes under alkaline conditions.				
F023			F023	1
Wastes (except wastewater and spent carbon from hydrogen chloride purification)from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols. (This listing does not include wastes from equipment used only for the production or use of hexa-chlorophene from highly purified, 2,4,5-tri-chlorophenol.)				

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
F024			F024	1
Wastes, including but not limited to distillation residues, heavy ends, tars, and reactor cleanout wasts, from the production of chlorinated aliphatic hydrocarbons, having carbon content from one to five, utilizing free radical catalyzed processes. (This listing does not include light ends, spent filters and filter aids, spent dessicants(sic), wastewater, wastewater treatment sludges, spent catalysts, and wastes listed in Section 261.32.)				
F025			F025	1
Condensed light ends, spent filters and filter aids, and spent dessicant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These 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			F026	1
Wastes (except wastewater and spent carbon from hydrogne chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetrapenta-, or hexachlorobenzene under alkaline conditions.				
F027			F027	1
Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This listing does not include formulations containing hexachlorophene synthesized from prepurified 2,4,5-tri-chlorophenol as the sole component.)				
K028			K028	1
Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027				
K001			K001	1
Bottom sediment sludge from the treatment of wastewaters from wood preserving processess that use creosote and/or pentachlorophenol.				
K002			K002	#
Wastewater treatment sludge from the production of chrome yellow and orange pigments.				
K003			K003	#
Wastewater treatment sludge from the production of molyodate orange pigments.				
K004			K004	10
Wastewater treatment sludge from the production of zinc yellow pigments.				

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
K005			K005	#
Wastewater treatment sludge from the production of chrome green pigments.				
K006			K006	10
Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated).				
K007			K007	10
Wastewater treatment sludge from the production of iron blue pigments.				
K008			K008	10
Oven residue from the production of chrome oxide green pigments.				
K009			K009	10
Distillation bottoms from the production of acetaldehyde from ethylene.				
K010			K010	10
Distillation side cuts from the production of acetaldehyde from ethylene.				
K011			K011	10
Bottom stream from the wastewater stripper in the production of acrylonitrile.				
K013			K013	10
Bottom stream from the acetonitrile column in the production of acrylonitrile.				
K014			K014	5000
Bottom from the acetonitrile purification column in the production of acrylonitrile.				
K015			K015	10
Still bottoms from the distillation of benzyl chloride.				
K016			K016	1
Heavy ends or distillation residues from the production of carbon tetrachloride.				
K017			K017	10
Heavy ends (still bottoms) from the purification column in the production of epi-chlorohydrin.				
K018			K018	1
Heavy ends from the fractionation column in ethyl chloride production.				
K019			K019	1
Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production.				
K020			K020	1
Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production.				
K021			K021	10
Aqueous spent antimony catalyst waste from fluoromethanes production.				

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
K022			K022	1
Distillation bottom tars from the production of phenol/acetone from cumene.				
K023			K023	5000
Distillation light ends from the production of ophthalic anhydride from naphthalene.				
K024			K024	5000
Distillation bottoms from the production of phthalic anhydride from naphthalene.				
K025			K025	10
Distillation bottoms from the production of nitrobenzene by the nitration of benzene.				
K026			K026	1000
Stripping still tails from the production of methyl ethyl pyndines.				
K027			K027	10
Centrifuge and distillation residues from toluene diisocyanate production.				
K028			K028	1
Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane.				
K029			K029	1
Waste from the product steam stripper in the production of 1,1,1-trichloroethane.				
K030			K030	1
Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene.				
K031			K031	1
By-product salts generated in the production of MSMA and cacodylic acid.				
K032			K032	10
Wastewater treatment sludge from the production of chlordane.				
K033			K033	10
Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane.				
K034			K034	10
Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane.				
K035			K035	1
Wastewater treatment sludges generated in the production of creosote.				
K036			K036	1
Still bottoms from toluene reclamation distillation in the production of disulfoton.				

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
K037			K037	1
Wastewater treatment sludges from the production of disulfoton.				
K038			K038	10
Wastewater from the washing and stripping of phorate production.				
K039			K039	10
Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate.				
K040			K040	10
Wastewater treatment sludge from the production of phorate.				
K041			K041	1
Wastewater treatment sludge from the production of toxaphene.				
K042			K042	10
Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T.				
K043			K043	10
2,6-Dichlorophenol waste from the production 2,4-D.				
K044			K044	10
Wastewater treatment sludges from the manufacturing and processing of explosives.				
K045			K045	10
Spent carbon from the treatment of wastewater containing explosives.				
K046			K046	100
Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds.				
K047			K047	10
Pink/red water from TNT operations.				
K048			K048	#
Dissolved air flotation (DAF) float from the petroleum refining industry.				
K049			K049	#
Slop oil emulsion solids from the petroleum refining industry.				
K050			K050	10
Heat exchanger bundle cleaning sludge from the petroleum refining industry.				
K051			K051	#
API separator sludge from the petroleum refining industry.				
K052			K052	10
Tank bottoms (leaded) from the petroleum refining industry.				
K060			K060	1
Ammonia still lime sludge from coking operations.				

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
K061			K061	#
Emission control dust/sludge from the primary production of steel in electric furnaces.				
K062			K062	#
Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332).				
K064			K064	##
Acid plant blowdown slurry/sludge resulting from thickening of blowdown slurry from primary copper production.				
K065			K065	##
Surface impoundment solids contained in and dredged from surface impoundments at primary lead smelting facilities.				
K066			K066	##
Sludge from treatment of process wastewater and/or acid plant blowdown from primary zinc production.				
K069			K069	#
Emission control dust/sludge from secondary lead smelting.				
K071			K071	1
Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.				
K073			K073	10
Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production.				
K083			K083	100
Distillation bottoms from aniline extraction.				
K084			K084	1
Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.				
K085			K085	10
Distillation or fractionation column bottoms from the production of chlorobenzenes.				
K086			K086	#
Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead.				
K087			K087	100
Decanter tank tar sludge from coking operations.				
K088			K088	
Spent potliners from primary aluminum reduction.				

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
K090			K090	
Emission control dust or sludge from ferrochromiumsilicon production.				
K091			K091	
Emission control dust or sludge from ferrochromium production.				
K093			K093	5000
Distillation light ends from the production of phthalic anhydride from ortho-xylene.				
K094			K094	5000
Distillation bottoms from the production of phthalic anhydride from ortho-xylene.				
K095			K095	100
Distillation bottoms from the production of 1,1,1-trichloroethane.				
K096			K096	100
Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane.				
K097			K097	1
Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane.				
K098			K098	1
Untreated process wastewater from the production of toxaphene.				
K099			K099	10
Untreated wastewater from the production of 2,4-D.				
K100			K100	#
Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting.				
K101			K101	1
Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.				
K102			K102	1
Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.				
K103			K103	100
Process residues from aniline extraction from the production of aniline.				
K104			K104	10
Combined wastewater streams generated from nitrobenzene/aniline production.				
K105			K105	10
Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes.				

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
K106			K106	1
Wastewater treatment sludge from the mercury cell process in chlorine production.				
K107			K107	10
Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazines.				
K108			K108	10
Condensed column overhead from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.				
K109			K109	10
Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.				
K110			K110	10
Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.				
K111			K111	10
Product washwaters from the production of dinitrotoluene via nitration of toluene.				
K112			K112	10
Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene.				
K113			K113	10
Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.				
K114			K114	10
Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.				
K115			K115	10
Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.				
K116			K116	10
Organic condensate from the solvent recovery column in the production of toluene disocyanate via phosgenation of toluenediamine.				
K117			K117	1
Wastewater from the reaction vent gas scrubber in the production of ethylene bromide via bromination of ethene.				
K118			K118	1
Spent absorbent solids from purification of ethylene dibromide in the production of ethylene dibromide.				

Hazardous Waste/Substances	CAS No.[1]	Threshold Planning[2] Quantity (pounds)	USEPA Waste Number	RQ (pounds)[3]
K123			K123	10
Process wastewater (including supernates, filtrates, and washwaters) from the production of ethylenebisdithiocarbamic acid and its salts.				
K124			K124	10
Reactor vent scrubber water from the production of ethylene-bisdithiocarbamic acid and its salts.				
K125			K125	10
Filtration, evaporation, and centrifugation solids from the production of ethylene-bisdithiocarbamic acid and its salts.				
K126			K126	10
Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylene-bisdithiocarbamic acid and its salts.				
K131			K131	100
Wastewater from the reactor and spent sulfuric acid from the acid dryer in the production of methyl bromide.				
K132			K132	1000
Spent absorbent and wastewater solids from the production of methyl bromide.				
K136			K136	1
Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.				

NOTES:

1 Chemical Abstract Service (CAS) Registry Number.

2 Quantity in storage above which Executive Agent must be notified (see *Hazardous Materials*).

3 Reportable quantity release which requires notification (see *POL Management*).

++ No reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 100 micrometers (0.004 inches).

+++ The RQ for asbestos is limited to friable forms only.

1* Indicates that the 1-pound RQ is a statutory RQ.

# Indicates that the RQ is subject to change when the assessment of potential carcinogenicity is completed.

The statutory RQ for this hazardous substance may be adjusted in a future rulemaking; until then the statutory RQ applies.

** Indicates that no RQ is being assigned to the generic or broad class.

Appendix 3-2

Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Toxic Wastes

CFR 261.33 (effective 5/8/90)

(COMMENT: primary hazardous properties of these materials have been indicated by the letter (t) (toxicity), (r) (reactivity), (i) (ignitability), and (c) (corrosivity); absence of a letter indicates that the compound is only listed for acute toxicity.)

USEPA Hazardous Waste No.	Substance
U001	acetaldehyde (i)
U034	acetaldehyde, trichloro-
U187	acetamide, N-(4-ethoxyphenyl)-
U005	acetamide, N-9H-fluoren-2-yl-
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)
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-,
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

USEPA Hazardous Waste No.	Substance
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-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-

USEPA Hazardous Waste No.	Substance
U055	benzene, (1-methylethyl)-(i)
U169	benzene, nitro- (i,t)
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
U203	1,3-benzodioxole, 5-(2-propenyl)-
U141	1,3-benzodioxole, 5-(1-propenyl)-
U090	1,3-benzodioxole, 5-propyl-
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 (i,t)
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)

USEPA Hazardous Waste No.	Substance
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
U238	carbamic acid, ethyl ester
U178	carbamic acid, methylnitroso-ethyl 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
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
U041	1-chloro-2,3-epoxypropane
U042	2-chloroethyl vinyl ether
U044	chloroform
U046	chloromethyl methyl ether
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

USEPA Hazardous Waste No.	Substance
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
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)
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
U094	7,12-dimethylbenz[a]anthracene
U095	3,3-dimethylbenzidine
U096	alpha,alpha-dimethylbenzylhydroperoxide (r)
U097	dimethylcarbamoyl chloride
U098	1,1-dimethylhydrazine

USEPA Hazardous Waste No.	Substance
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)
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-
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
U359	ethane, 1,1,2-trichloro-
U173	ethanol, 2,2'-(nitrosoimino)bis-
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)
U117	ethyl ether (i)
U114	ethylenebisdithiocarbamic acid, salts and esters
U067	ethylene dibromide
U077	ethylene dichloride
U359	ethylene glycol monoethyl ether

USEPA Hazardous Waste No.	Substance
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
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
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
U147	maleic anhydride

USEPA Hazardous Waste No.	Substance
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-
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
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-

USEPA Hazardous Waste No.	Substance
U167	1-naphthalenamine
U168	2-naphthalenamine
U026	naphthalenamine, N,N'-bis (2-chloroethyl)-
U165	naphthalene
U047	naphthalene, 2-chloro-
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
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)
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)-
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-

USEPA Hazardous Waste No.	Substance
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-
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
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
U162	2-propenoic acid, 2-methyl-, methyl ester (i,t)
U194	n-propylamine (i,t)

USEPA Hazardous Waste No.	Substance
U083	propylene dichloride
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)*
U232	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
U153	thiomethanol (i,t)
U244	thioperoxydicarbonic diamide, tetramethyl-
U219	thiourea
U244	thiuram
U220	toluene
U221	toluenediamine
U223	toluene diisocyanate (r,t)
U328	o-toluidine
U353	p-toluidine
U222	o-toluidine hydrochloride
U011	1H-1,2,4-triazol-3-amine
U227	1,1,2-trichloroethane

USEPA Hazardous Waste No.	Substance
U228	trichloroethylene
U121	trichloromonofluoromethane
U230	2,4,5-trichlorophenol
U231	2,4,6-trichlorophenol
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 3-3

Toxicity Characteristics Constituents and Regulatory Levels
(40 CFR 261.24)

USEPA HW No.	Constituent	CAS No.	Chronic toxicity reference level	Regulatory level (mg/L)
D004	Arsenic	7440-38-2	0.05	5.0
D005	Barium	7440-39-3	1.0	100.0
D018	Benzene	71-43-2	0.005	0.5
D006	Cadmium	7440-43-9	0.01	1.0
D019	Carbon tetrachloride	56-23-5	0.005	0.5
D020	Chlordane	57-74-9	0.0003	0.03
D021	Chlorobenzene	108-90-7	1	100.0
D022	Chloroform	67-66-3	0.06	6.0
D007	Chromium	7440-47-3	0.05	5.0
D023	o-Cresol	95-48-7	2	200.0 [1]
D024	m-Cresol	108-39-4	2	200.0 [1]
D025	p-Cresol	106-44-5	2	200.0 [1]
D026	Cresol	———	2	200.0 [1]
D016	2,4-D	94-75-7	0.1	10.0
D027	1,4-Dichlorobenzene	106-46-7	0.075	7.5
D028	1,2-Dichloroethane	107-06-2	0.005	0.5
D029	1,1-Dichloroethylene	75-35-4	0.007	0.7
D030	2,4-Dinitrotoluene	121-14-2	0.0005	0.13 [2]
D012	Endrin	72-20-8	0.0002	0.02
D031	Heptachlor (and its hydroxide)	76-44-8	0.00008	0.008
D032	Hexachlorobenzene	118-74-1	0.0002	0.13 [2]
D033	Hexachloro-1,3-butadiene	87-68	3	0.005
D034	Hexachloroethane	67-72-1	0.03	3.0
D008	Lead	7439-92-1	0.05	5.0
D013	Lindane	58-89-9	0.004	0.4
D009	Mercury	7439-97-6	0.002	0.2
D014	Methoxychlor	72-43-5	0.1	10.0
D035	Methyl ethyl ketone	78-93-3	2	200.0
D036	Nitrobenzene	98-95-3	0.02	2.0
D037	Pentachlorophenol	87-86-5	1	100.0
D038	Pyridine	110-86-1	0.04	5.0 [2]
D010	Selenium	7782-49-2	0.01	1.0
D011	Silver	7440-22-4	0.05	5.0
D039	Tetrachloroethylene	127-18-4	0.007	0.7
D015	Toxaphene	8001-35-2	0.005	0.5
D040	Trichloroethylene	79-01-6	0.005	0.5
D041	2,4,5-Trichlorophenol	95-95-4	4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	0.02	2.0
D017	2,4,5-TP (Silvex)	93-72-1	0.01	1.0
D043	Vinyl chloride	75-01-4	0.002	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.

Source: Federal register 55:61, page 11804.

Appendix 3-4

Potentially Incompatible Hazardous Wastes

Below are examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences that result from mixing materials in one group with materials in another group. The list is intended as a guide to indicate the need for special precautions when managing these potentially incompatible waste materials or components. This list is not intended to be exhaustive. Operators must, as the regulations require, adequately analyze their wastes so they can avoid creating uncontrolled substances or reactions of the type listed below, whether listed below or not.

In the lists below, the mixing of a *Group A* material with a *Group B* material may have the potential consequences as noted.

Group 1-A	Group 1-B
Acetylene sludge Alkaline caustic liquids Alkaline cleaner Alkaline corrosive liquids Alkaline corrosive battery acid Caustic wastewater Lime sludge and other corrosive alkalies Lime wastewater Lime and water Spent caustic	Acid sludge Acid and water Battery acid Chemical cleaners Electrolyte, acid Etching acid liquid or solvent Pickling liquor and other corrosive acids Spent acid Spent mixed acid Spent sulfuric acid

Potential Consequences: Heat generation, violent reaction.

Group 2-A	Group 2-B
Aluminum Beryllium Calcium Lithium Magnesium Potassium Sodium Zinc powder Other reactive metals and metal hydrides	Any waste in Group 1-A or 1-B

Potential Consequences: fire or explosion; generation of flammable hydrogen gas.

Group 3-A	Group 3-B
Alcohols Water	Any concentrated waste in Groups 1-A or 1-B Calcium Lithium Metal hydrides Potassium SO_2Cl_2, $SOCl_2$, PCl_3, CH_3SiCl_3 Other water-reactive waste

Potential Consequences: fire; explosion; heat generation; generation of flammable or toxic gases.

Group 4-A	Group-4-b
Alcohols Aldehydes Halogenated hydrocarbons Nitrated hydrocarbons Unsaturated hydrocarbons Other reactive organic compounds and solvents	Concentrated Group 1-A or Group 1-B wastes Group 2-A wastes

Potential Consequences: fire explosion; violent reaction.

Group 5-A	Group 5-B
Spent cyanide and sulfide solutions	Group 1-B wastes

Potential Consequences: generation of toxic hydrogen cyanide or hydrogen sulfide gas.

Appendix 3-4 (continued)

Group 6-A	Group 6-B
Chlorates Chlorine Chlorites Chromic acid Hypochlorites Nitrates Nitric acid, fuming Perchlorates Permanganates Perioxides Other strong oxidizers	Acetic acid and other organic acids Concentrated mineral acids Group 2-A wastes Group 4-A wastes Other flammable and combustible wastes

Potential Consequences: fire; explosion; violent reaction.

Source: "Law, Regulations, and Guidelines for Handling of Hazardous Waste." California Department of Health, February 1975 (As referenced in 40 CFR, Part 264, Appendix V).

INSTALLATION:	COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Worldwide ECAS	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (4) Safety and Health Officer (5) Fire Department (6) Director of Logistics (DOL) (7) Fuels Management Officer (18) TSDF Operators (DEH,DOL,DRMO) (19) Shop Activity Supervisor (23) Defense and Reutilization Marketing Office (DRMO)

Section 4

Natural & Cultural

Resources Management

SECTION 4

NATURAL AND CULTURAL RESOURCES MANAGEMENT

A. Applicability of this Protocol

This protocol applies to any military community with improved, semi-improved, and unimproved grounds. Plans and programs for protection and management of natural resources such as soil, water, plants, and wildlife, as well as cultural resources, which include historic and prehistoric properties, are included in this protocol.

B. DOD Regulations

- *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992. Chapter 12 contains criteria for required plans and programs needed for the protection and management of cultural resources. Chapter 13 addresses required plans and programs for the protection, establishment, and management of natural resources and endangered or threatened species.

- Department of Defense (DOD) Directive 4700.4,*Natural Resources Management Program*, 24 January 1989, prescribes policies and procedures for an integrated program for multiple-use management of natural resources on property under DOD control. Although it does not directly regulate overseas military communities, it is considered a good management practice (GMP).

- DOD Instruction 4710.1, *Archaeological and Historic Resources Management*, 21 June 1984, provides policy, prescribes procedures, and assigns responsibilities for the management of archaeological and historic resources located in and on waters and lands under DOD control. It establishes the policy that DOD components will integrate the archaeological and historical preservation requirements of applicable laws with the planning and management of activities under DOD control.

- DOD Instruction 7310.5, *Accounting for Production and Sale of Forest Products*, 25 January 1988, provides policy on DOD forestry accounting procedures.

C. Army Regulations (ARs)

- AR 420-40, *Historic Preservation*, 15 May 1984, provides policy and regulatory guidance on historic preservation. It states that outside of the United States, "Department of the Army activities will comply with:
  1. historic preservation requirements of the host nation
  2. international and Status of Forces Agreements

3. requirements for National Historic Preservation Act (NHPA) protection of properties on the World Heritage List."

Therefore, while the standards outlined in AR 420-40 are considered GMPs for Outside Continental United States (OCONUS) installations, the compliance procedures are not applicable.

- AR 420-74, *Natural Resources--Land, Forest, and Wildlife Management*, 25 February 1986, provides Army policy for managing natural resources and attaining the goal of ensuring that Army actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species.

D. Responsibility for Compliance

- The Directorate of Engineering and Housing (DEH) is responsible for funding, supervising, controlling, and managing installation natural resources, including plant and animal species. They are also responsible for supervising, controlling, and managing installation historic preservation programs.

- The Installation Historic Preservation Officer is responsible for implementing the historic preservation program, training installation personnel, and locating, inventorying, and evaluating installation cultural resources.

- The Natural Resources Manager is responsible for preparing management plans and cooperative agreements, budgets, and the annual natural resources report. The Natural Resources Manager also implements and controls all activities in furtherance of natural resources management. On installations without a full-time Natural Resources Manager, these duties would normally be assigned to the environmental coordinator or community planner.

E. Key Compliance Definitions

These definitions were obtained from the directives/instructions and ARs listed at the end of each definition. If there is no citation listed for the definition, it has been drawn from the U.S. Code of Federal Regulations (CFR).

- *Action* - all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by DOD installations (OEBGD, Chapter 12 and 13, Definitions).

- *Adverse Effect* - changes that diminish the quality or significant value of archeological resources, natural resources, or cultural resources or properties. For biological resources, adverse effects include overall population fitness (OEBGD, Chapter 12 and 13, Definitions).

- *Archaeological Resource* - any material remains of prehistoric or historic human life or activities. Such resources include, but are not limited to: pottery, basketry, bottles, weapons, weapon projectiles, tools, structures or portions of structures, pit houses, rock paintings, rock carvings, intaglios, graves, human skeletal materials, or any portion of any of the forgoing items (OEBGD, Chapter 12, Definitions).

- *Building* - a structure created to shelter any form of human activity, such as a house, barn, church, hotel, or similar structure. Building may refer to a historically related complex, such as a courthouse and jail or a house and barn.

- *Burial Site* - any natural or prepared physical location, whether originally below, on, or above the surface of the earth, into which, as a part of the death rite or ceremony of a culture, individual human remains are deposited.

- *Category I* - installations having land and water areas suitable for the conservation and management of fish, wildlife, and other natural resources (AR 420-74, para 10-4a(1)).

- *Category II* - installations for which a decision is pending as to program suitability within the meaning of Category I (AR 420-74, para 10-3a(2)).

- *Conservation* - wise management and use of natural resources to provide the best public benefits for present and future generations (OEBGD, Chapter 13, Definitions).

- *Cultural Mitigation* - specific steps designed to lessen the adverse effects of a DOD action on a cultural or archeological resource, including (OEBGD, Chapter 12, Definitions):
    1. limiting the magnitude of the action
    2. relocating the action in whole or in part
    3. repairing, rehabilitating, or restoring the affected property
    4. recovering and recording data from cultural properties that may be destroyed or substantially altered.

- *Cultural Resources Program* - identification, evaluation, documentation, curation, acquisition, protection, rehabilitation, restoration, management, stabilization, maintenance, recording, and reconstruction of cultural resources and any combination of the foregoing (OEBGD, Chapter 12, Definitions).

- *Cultural Property or Resources* - physical remains of any prehistoric or historic district, site, building, structure, or object significant in world, national, or local history, architecture, archeology, engineering, or culture. The term includes artifacts, records, and remains that are related to such a district, site, building, structure, or object (OEBGD, Chapter 12, Definitions).

- *Curatorial Service* - managing and preserving a collection according to professional museum and archival practices.

- *Coastal Zone* - the coastal waters (including lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder) strongly influenced by each other and in proximity to the shoreline of the several coastal states (AR 420-74, para 1-19).

- *Conservation* - the protection, improvement and use of natural resources according to principles that will provide optimum public benefit and support the military missions (AR 420-74, para 1-7).

- *Critical Habitat* - specific areas within the geographic area, commonly occupied by a species, that contain features essential to the conservation of the species and that may require special management consideration or protection.

- *Destruction or Adverse Modification* - a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical.

- *Endangered Species* - any species of flora or fauna, listed in Appendix 4-1 or designated by the host nation, whose continued existence is, or is likely to be, threatened and is therefore subject to special protection from destruction or adverse modification of associated habitat (OEBGD, Chapter 13, Definitions).

- *Forest Management* - the science, art, and practice of managing and using, for human benefit, the natural resources that occur on or in association with forest lands (AR 420-74, para 1-10).

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

- *Grounds* - all land and water acreage for which an installation commander (IC) has responsibility (including satellite areas). Grounds are grouped into the following three categories: improved grounds, semi-improved grounds, and unimproved grounds (AR 420-74, para 1-13).

- *Historic Preservation* - identification, evaluation, documentation, curation, acquisition, protection, rehabilitation, restoration, management, stabilization, maintenance, recording, and reconstruction of cultural resources, and any combination of the foregoing.

- *Historic Property or Resource* - physical remains of any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register. The term includes artifacts, records, and remains that are related to such a district, site, building, structure, or object.

- *Improved Grounds* - acreage on which intensive maintenance activities must be planned and performed annually as fixed requirements. Activities include mowing, irrigating, fertilizing, cultivating, aerating, seeding, sodding, spraying, pruning, trimming, weeding, controlling dust, erosion, and drainage, planting for landscape effect, abating wind and sound, and conducting other intensive practices (AR 420-74, para 1-13).

- *Inventory* - to determine the location of cultural resources that may have world, national, or local significance (OEBGD, Chapter 12, Definitions).

- *Land Management* - the planning and execution of programs to improve, utilize and maintain all land and water areas for the greatest net public benefit while supporting the military mission. Included are subordinate land uses that are mutually compatible and consistent with maintaining environmental qualities (AR 420-74, para 1-9).

- *Management Plan* - a document describing natural resources and their quantities, conditions, and actions to ensure conservation and good stewardship (OEBGD, Chapter 13, Definitions).

- *Material Remains* - physical evidence of human habitation, occupation, use, or activity, including the site, loci, or context in which such evidence is situated, including:
  1. surface or subsurface structures
  2. surface or subsurface artifact concentrations or scatters
  3. whole or fragmentary tools, implements, containers, weapons, clothing, and ornaments
  4. by-products, waste products, or debris resulting from manufacture or use
  5. organic waste
  6. human remains
  7. rock carvings, rock paintings, and intaglios
  8. rock shelters and caves
  9. all portions of shipwrecks
  10. any portion or pieces of any of the foregoing.

- *Multiple-Use* - the integrated management of all natural resources, to achieve the optimum use and enjoyment while maintaining the environmental qualities, ecological relationships, and aesthetic values in proper balance (AR 420-74, para 1-6).

- *Natural Resource* - all living and inanimate materials supplied by nature that are of aesthetic, ecological, educational, historical, recreational, scientific, or other value (OEBGD, Chapter 13, Definitions).

- *Natural Resources* - the viable and/or renewable products of nature and their environments of soil, air, and water. Included are plants and animals occurring on grasslands, rangelands, and croplands, and in forests, lakes, and streams (AR 420.74, para 1-6).

- *Natural Resources Management* - action taken to protect, manipulate, alter, or manage environmental, human, and biological resources in harmony with each other to meet present and future human needs (OEBGD, Chapter 13, Definitions).

- *Preservation* - the act or process of applying measures to sustain the existing form, integrity, and material of a building or structure and the existing form and vegetative cover of a site. It may include initial stabilization work where necessary, as well as ongoing maintenance of the historic building materials (OEBGD, Chapter 12, Definitions).

- *Property* - a site, building, object, structure, or collection of such items (OEBGD, Chapter 12, Definitions).

- *Protection* - the act or process of applying measures designed to affect the physical condition of a property by safeguarding it from deterioration, loss, attack, or alteration, or to cover or shield the property from danger or injury. In the case of buildings and structures, such treatment is generally temporary and anticipates future historic preservation treatment; in the case of archaeological sites, the protective measure may be temporary or permanent (OEBGD, Chapter 12, Definitions).

- *Restoration* - the act or process of accurately recovering the form and details of property and its setting, as it appeared at a particular period of time, by means of the removal of later work or by the replacement of missing earlier work.

- *Semi-improved Grounds* - includes areas on which periodic recurring maintenance is performed but to a lesser degree than on improved grounds. Practices normally include such cyclic variables as soil sterilization, weed and brush control, drainage maintenance, and mowing for fire protection. Semi-improved grounds acreage may be combined with improved grounds acreage for reporting purposes when only two categories of grounds are used (AR 420-74, para 1-13).

- *Sustained Yield* - production of renewable natural resources a land or water area can maintain at a given intensity of management (AR 420-74, para 1-16).

- *Threatened Species* - any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

- *Undertaking* - any project, activity, or program that can result in changes in the character or use of cultural resources if any such resources are located in the area of potential effects.

- *Unimproved Grounds* - acreage not classified as improved or semi-improved (AR 420-74, para 1-13).

NATURAL AND CULTURAL RESOURCES MANAGEMENT

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS	CONTACT THESE PERSONS OR GROUPS(a)
All installations	4-1 through 4-3	(1)(2)(21)
Cultural and historic properties	4-4 through 4-10	(1)(2)(12)
Curation activities	4-11 and 4-12	(1)(2)(12)
Natural resources	4-13 through 4-28	(1)(2)(9)(12)(15)(22)(31)

(a) CONTACT/LOCATION CODE:

(1) Directorate Engineering and Housing (DEH)
(2) Environmental Coordinator (EC)
(9) Chief of Operations and Maintenance (O&M)
(12) Director of Plans, Training, Mobilization, and Security (DPTMSEC)
(15) Land Management Officer (DEH)
(21) Public Affairs Office (PAO)
(22) Staff Judge Advocate
(31) Directorate of Personnel and Community Activities (DPCA)

NATURAL AND CULTURAL RESOURCES MANAGEMENT

Records to Review

- For construction (including maintenance, demolition, rehabilitation, etc.) activities: documentation of finding of no adverse effect, finding of adverse effect, or Memorandum of Agreement with the State Historic Preservation Office (SHPO), or requests for comment when there is no agreement on historic properties.
- Installation Master Plan
- Historic Preservation Plan
- Standing Operating Procedures for ensuring compliance
- Curation inventories and bailment agreements
- Archaeological site forms and maps
- Cultural resources reports, contracts, and scopes of work

Physical Features to Inspect

- Sites of historic or archaeological interest (designation, protection, and interpretation)
- Repositories of archaeological records and collections
- Buildings and structures of potential historical significance

People to Interview

- Directorate of Engineering and Housing (DEH)
- Environmental Coordinator (EC)
- Chief of Operations and Maintenance (O&M)
- Director of Plans, Training, Mobilization, and Security (DPTMSEC)
- Land Management Officer (DEH)
- Public Affairs Office (PAO)
- Staff Judge Advocate
- Directorate of Personnel and Community Activities (DPCA)

COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL INSTALLATIONS	
4-1. Determine actions or changes since previous review (GMP).	Check copy of previous review to determine if noncompliance issues have been resolved. (1)(2)
...	...
4-2. Copies of all relevant DOD directive/ instruction, ARs, and guidance documents on natural and cultural resources should be maintained at the installation (GMP).	Determine if the following documents are maintained and kept current at the installation: (1)(2)(21) - *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992. - DOD Directive 5100.50, *Protection and Enhancement of Environmental Quality*, 24 May 1973. - AR 200-2, *Environmental Effects of Army Actions*, 23 December 1988. - AR 215-2, *Management and Operations of Army Morale, Welfare, and Recreation Programs and Nonappropriated Funds Instrumentalities.* - AR 420-40, *Historic Preservation*, 15 May 1984. - AR 420-74, *Natural Resources -- Land, Forest, and Wildlife Management*, 25 February 1986. - AR 870-20, *Museums and Historical Artifacts*, 9 February 1987 - EO 11988, *Floodplain Management.* - EO 11990, *Protection of Wetlands.* - TM 5-630, *Ground Maintenance and Land Management.* - TM 5-631, *Natural Resources -- Forest Management.* - TM 5-633, *Natural Resources -- Fish and Wildlife Management.* - TM 5-635, *Natural Resources -- Outdoor Recreation and Cultural Values.* - TM 5-801-1, *Historic Preservation; Administrative Procedures.* - TM 5-801-2, *Historic Preservation; Maintenance Procedures.* - TM 5-803-1, *Installation Master Planning.* - TM 5-803-12, *Planning of Outdoor Recreation Areas.*
...	...
4-3. Installations are required to comply with applicable MACOM regulations and substantive host nation regulations concerning natural and cultural resources (AR 200-1, para 1-40).	Verify that the installation is complying with applicable MACOM and host nation requirements. (1)(2) (NOTE: Issues that may be regulated by the MACOM or host nation agencies include: - designation of historic sites - protection of historic sites - endangered and threatened species lists - hunting and trapping restrictions - erosion control - wetlands - floodplains - coastal zones.)
...	...

(1) Directorate Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (9) Chief of Operations and Maintenance (O&M) (12) Director of Plans, Training, Mobilization, and Security (DPTMSEC) (15) Land Management Officer (DEH) (21) Public Affairs Office (PAO) (22) Staff Judge Advocate (31) Directorate of Personnel and Community Activities (DPCA)

COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
CULTURAL AND HISTORIC PROPERTIES	
4-4. Installations must inventory cultural property and archaeological resources in areas under DOD control if financially and otherwise practical (OEBGD, Chapter 12, Criteria 2 and 5).	Determine if the installation has a program to locate and inventory properties and resources. (1)(2) (NOTE: The cultural inventory can be developed from a records search and visual survey.)
...	...
4-5. Prior to the start of a new undertaking, installations must take into account the effects of the undertaking on archaeological properties and cultural resources (OEBGD, Chapter 12, Criteria 8).	Verify that prior to the start of a new undertaking, the impact of that undertaking on archaeological and cultural properties is reviewed. (1)(2)
...	...
4-6. The installation should notify appropriate host nation officials of the discovery of any potential cultural property or resources or archaeological resources not previously inventoried that are discovered in the course of a DOD action (OEBGD, Chapter 12, Criteria 10).	Determine if appropriate host nation officials have been notified of the discovery of potential cultural or archaeological resources. (1)(2)(12)
...	...
4-7. When there is a new discovery of a cultural property or resource or archeological resource not previously inventoried, the newly-discovered item must be preserved and protected pending a decision on final disposition by the installation commander (OEBGD, Chapter 12, Criteria 9).	Determine if there have been any newly discovered cultural properties or resources or archaeological resources. (1)(2) Verify that the resource is being protected and preserved. (1)(2)(12)
...	...

(1) Directorate Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (9) Chief of Operations and Maintenance (O&M) (12) Director of Plans, Training, Mobilization, and Security (DPTMSEC) (15) Land Management Officer (DEH) (21) Public Affairs Office (PAO) (22) Staff Judge Advocate (31) Directorate of Personnel and Community Activities (DPCA)

COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-8. Installations must develop a plan for the protection and preservation of cultural resources (OEBGD, Chapter 12, Criteria 3).	Verify that installations with cultural resources have a plan for the protection and preservation of cultural resources and mitigation of any adverse effects. (1)(2)
...	...
4-9. Personnel performing cultural or archaeological resource functions are required to have the required expertise in world, national and local history and culture (OEBGD, Chapter 12, Criteria 1).	Verify that staffing optimizes professionally trained personnel for technical guidance. Examples include: (1) - archaeologist - historical architect - architectural historian - historian - preservation expert.
...	...
4-10. Installations are required to establish measures sufficient to protect known cultural property or archaeological resources until appropriate mitigation or preservation can be completed (OEBGD, Chapter 12, Criteria 4, 6, and 7).	Verify that cultural and archaeological resources are protected at the installation. (1)(2)(12) Verify that the installation has established measures to prevent installation personnel from disturbing or removing archaeological resources without permission from the host nation. (1)(2)
...	...
CURATION ACTIVITIES	
4-11. OCONUS installations with historically significant Army artifacts are required to inform the Chief of Military History (CMH) through Army Central Activity of the U.S. Army Material Command of those artifacts being held overseas for return to the continental United States (AR 870-20, para 1-4c).	Determine if the installation has any historically significant Army artifacts being held for return to the United States. (1)(2)(12) Verify that the CMH has been notified. (1)(2)(12)
...	...

(1) Directorate Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (9) Chief of Operations and Maintenance (O&M) (12) Director of Plans, Training, Mobilization, and Security (DPTMSEC) (15) Land Management Officer (DEH) (21) Public Affairs Office (PAO) (22) Staff Judge Advocate (31) Directorate of Personnel and Community Activities (DPCA)

COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-12. Directors of museums containing Army artifacts are required to manage collections according to specific standards (AR 80-20, para 1-4h).	Verify that the director has addressed the following issues in the care of the collection: (1)(2)(12) - identification - designation - collection - preservation/conservation - classification - accessioning/cataloging - loans - transfers - disposition - performance of historical research.
...	...
NATURAL RESOURCES	
4-13. Installations with land and water areas are required to develop a program for conserving, managing and protecting natural resources (OEBGD, Chapter 13, Criteria 1).	Verify that the program takes into consideration host nation conservation practices. (1)(2)
...	...
4-14. Installations are required to have management plans for land, soil, and water, grazing and cropland, fish and wildlife, and outdoor recreation where these resources exist (OEBGD, Chapter 13, Criteria 2).	Verify that mangement plans exist for the indicated resources where applicable. (1)(2)
...	...
4-15. All Category I installations are required to prepare and implement Cooperative Plan Agreements for Conservation and Development of Fish and Wildlife Resources (AR 420-74, para 8-1b, 8-3b, and 5-4).	Verify that the Cooperative Plan Agreement for Conservation and Development of Fish and Wildlife Resources is prepared and amended as appropriate in coordination with fish and wildlife conservation agencies. (1)(2) (NOTE: Category I installations are those having land and water areas suitable for the conservation and management of fish, wildlife, and other natural resources as determined by consultation with appropriate fish and wildlife agencies.)
...	...

(1) Directorate Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (9) Chief of Operations and Maintenance (O&M) (12) Director of Plans, Training, Mobilization, and Security (DPTMSEC) (15) Land Management Officer (DEH) (21) Public Affairs Office (PAO) (22) Staff Judge Advocate (31) Directorate of Personnel and Community Activities (DPCA)

COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-16. Installations with active natural resources programs or the potential for natural resources programs under the concept of AR 420-74 are required to have a Natural Resources Conservation and Beautification Committee (AR 420-74, para 2-7).	Determine if the installation has an active natural resources program or the potential for a program as described in AR 420-74. (1)(2)(9) Verify that the installation has a Natural Resources Conservation and Beautification Committee that: (1)(2) - assures continuous planning and balanced application of the natural resources program - plans, promotes, and fosters natural beauty, environmental protection, and enhancement programs both on base and in cooperation with local communities. Verify that the committee includes: (1)(2)(9) - facilities engineer - natural resource management personnel - environmental coordinator - entomologist - provost marshal/security officer - operations, safety, legal, medical, recreation services, and veterinarian personnel - representative of the installation's rod and gun club.
...	...
4-17. Installations are required to provide for controlled public access at Department of Army installations and facilities with land and water areas suitable for the recreational use and enjoyment by the public (AR 420-74, para 2-8a).	Determine if the installation has any land and water areas suitable for recreational use and enjoyment by the public. (1)(2)(9) Verify that access is provided within manageable quotas and without impairment of mission. (1)(2) (NOTE: When access must be withheld, the reasons must be substantiated by a statement in the Cooperative Plan Agreement.)
...	...
4-18. Personnel are required to be designated and trained for environmental responsibilities (OEBGD, Chapter 13, Criteria 7; AR 420-74, para 2-2, 2-3c).	Verify that staffing optimizes professionally trained personnel, such as the following, necessary for technical guidance in planning and executing natural resources programs: (1)(2)(12) - agronomist - forester - wildlife manager - landscape architect - soil conservationist - agricultural engineer - horticulturist. Determine if periodic and comprehensive technical instruction concerning land preparation, soil management, fertilization, pruning, spraying, and other horticulture skills is provided for personnel engaged in the care and maintenance of lawns, trees, shrubs, and other landscape plants. (1)
...	...

(1) Directorate Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (9) Chief of Operations and Maintenance (O&M) (12) Director of Plans, Training, Mobilization, and Security (DPTMSEC) (15) Land Management Officer (DEH) (21) Public Affairs Office (PAO) (22) Staff Judge Advocate (31) Directorate of Personnel and Community Activities (DPCA)

COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-19. Grounds are required to be maintained to meet designated use and assure harmony with natural landscape (OEBGD, Chapter 13, Criteria 6, and 9; AR 420-74, para 3-1, 3-2, 3-8).	Verify that turf areas are maintained with a permanent vegetative cover of desirable plants. (1)(9) Verify that landscape planting, pruning, cultivation, and other maintenance is done according to Technical Manual (TM) 5-630. (1)(9)
...	...
4-20. Installations with recreation resources must be actively involved in developing a Cooperative Plan Agreement for Outdoor Recreation (AR 215-2 and AR 420-74, para 7-1).	Verify that outdoor recreation program addresses the following: (1)(2)(15)(31) - maintenance responsibilities - evaluations for off-road vehicles - fish and wildlife resources - installation potential to support community recreation needs.
...	...
4-21. Installations are required to complete the Installation Natural Resources Report (DD-MIL(A)670) according to specific standards (AR 420-74, para 10-1 through 10-4).	Verify that the installation has prepared the Installation Natural Resources Report at the end of each fiscal year and dispatched it to Headquarters, Department of the Army (HQDA)(DANE-ZCF-B). (1)(2)(15)(31) Verify that the report includes: (1)(2)(15)(31) - Part I: Land Use and Conservation, DA Form 2785-R (only required if the installation must prepare the Land Management part of the *Installation Natural Resources Management Plan*) - Part II: Forest Management, DA Form 2785-1-R (only required if the installation is required to prepare the Forest Management Part of the *Installation Natural Resources Management Plan*) - Part III: Fish and Wildlife Management, DA Form 2785-2-2 (only required to be completed by Category I and II installations annually).
...	...

4-22. Effective forest management must provide for the sustained production of timber and related natural resources values (AR 420-74, para 4-1 and 4-4).	Verify that forest management is done so that: (1)(2)(15)
	
	- volume inventories are made and kept current for all forest lands managed for timber production
	- small volume (including firewood) sales are in accordance with AR 405-90
	- harvesting and treatment provides for:
	  - sustained yield
	  - improved training areas
	  - improved watersheds
	  - improved wildlife habitat
	  - complemented natural beauty values along scenic corridors.

...	...

(1) Directorate Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (9) Chief of Operations and Maintenance (O&M) (12) Director of Plans, Training, Mobilization, and Security (DPTMSEC) (15) Land Management Officer (DEH) (21) Public Affairs Office (PAO) (22) Staff Judge Advocate (31) Directorate of Personnel and Community Activities (DPCA)

COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-23. Installations are required to manage endangered species (OEBGD, Chapter 13, Criteria 3 through 5).	Verify that installation commanders maintain a list of species determined to be threatened or endangered by the host nation. (1)(2) Verify that host nation officials are notified when a new endangered species is identified on the installation. (1)(2) Verify that if it is financially and otherwise practical, a survey is done for endangered species identification. (1)(2) (NOTE: See the list of endangered species in Appendix 4-1.)
...	...
4-24. All installations with endangered and threatened species must carry out programs for their conservation (OEBGD, Chapter 13, Criteria 5; AR 420-74, para 6-2).	Verify that consultations have been held with host nation conservation agencies. (1)(2) Verify that, where applicable, an inventory of endangered or threatened flora or fauna and their habitat that are indigenous to or dependent upon the installation has been developed. (1)(2)
...	...
4-25. The installation's Fish and Wildlife Management Program must be operated according to specific parameters (OEBGD, Chapter 13, Criteria 8; AR 420-74, paras 5-1, 5-2, 5-5, and 5-6).	Verify that fishing, hunting, and trapping are authorized and controlled in conformance with host nation regulations and approved management plans. (1)(2) Verify that habitats that are favorable to the reproduction and survival of indigenous fish and wildlife are maintained and protected. (1)(2) Verify that foreign species of fish and wildlife have not been introduced to Army land without approval. (1)(2)
...	...

(1) Directorate Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (9) Chief of Operations and Maintenance (O&M) (12) Director of Plans, Training, Mobilization, and Security (DPTMSEC) (15) Land Management Officer (DEH) (21) Public Affairs Office (PAO) (22) Staff Judge Advocate (31) Directorate of Personnel and Community Activities (DPCA)

COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
4-26. Land management operations must be consistent with modern conservation and land use principles (AR 420-74, paras 2-10 and 2-13 through 2-16).	Verify that land management at the installation includes the following issues: (1)(2)(15) - dust and erosion control - fire protection - weed control. Determine the compatible uses and conduct periodic inspections of land involved by examining leases, easements, and other special uses, including: (1)(2)(15) - condition of agriculture, grazing, and timber (or other resources) sale areas leased - compliance with lease provisions, environmental recreation, and good professional practice. Verify that an inventory and classification has been done of the current resources, including identification and evaluation of the condition and potential and aesthetics of wetland, marine, estuarine, fresh water, forest, grassland, scenic, and natural areas, and any other significant environmental element. (1)(2)(15) Verify that inventories identify endangered and threatened species of flora and fauna and archeological and historic sites. (1)(2)(15)
...	...
4-27. A protective vegetative cover or other standard soil erosion/ sediment control practices must be used to control dust or stabilize sites (OEBGD, Chapter 13, Criteria 10; AR 420-74, para 3-1).	Verify that Land Management addresses, in detail, erosion problems on training and maneuvering areas, and proposes remedial actions. (1)(2)(12)(15) Verify that the installation has been surveyed to locate areas where bare soil is exposed and current or potential erosion obvious. (1)(2) Verify that remedial actions have been initiated. (1)(2)
...	...
4-28. The installation should have a mitigation and monitoring plan (GMP).	Determine if there is a mitigation and monitoring plan for environmental compliance. (1)(2)(9)(12) Verify that the installation has developed plans to preserve, protect, and acquire the water supplies necessary to support all natural resources projects and programs. (1)(2)(22)

(1) Directorate Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (9) Chief of Operations and Maintenance (O&M) (12) Director of Plans, Training, Mobilization, and Security (DPTMSEC) (15) Land Management Officer (DEH) (21) Public Affairs Office (PAO) (22) Staff Judge Advocate (31) Directorate of Personnel and Community Activities (DPCA)

Appendix 4-1

Endangered/Threatened Species

MAMMALS		
COMMON NAME	SCIENTIFIC NAME	HISTORIC RANGE
Ass, Asian wild (=Kulgan, onager)	*Equus hemionus*	Southwestern and Central Asia
Bandicoot, barred	*Peremeles bougainville*	Australia
Bandicoot, desert	*Perameles eremiana*	Australia
Bandicoot, lesser rabbit	*Perameles leucura*	Australia
Bandicoot, pig-footed	*Chaeropusecaudatus*	Australia
Bandicoot, rabbit	*Macrotus lagotis*	Australia
Banteng	*Bos javanicus (=banteng)*	Southeast Asia
Bat, Mexican long-nosed	*Leptonyucteris nivalis*	Central America
Bat, Sanborn's long-nosed	*Leptonycteris sanborni (=yerbabuenae)*	USA, Mexico, Central America
Cat, Iriomote	*Felis (Mayailurus) iriomotensis*	Japan (Iriomote Island, Ryuku Islands)
Cat, marbled	*Felis marmorata*	Southeast Asia
Chamois, Apennine	*Rupicapra rupicapta ornata*	Italy
Deer, Eld's brow-antlered	*Carvus eldi*	Southeast Asia
Deer, Philippine	*Axis (=Cervus) porcinus calamienensis*	Philippines (Calamian Islands)
Deer, Ryukyu sika	*Cervus nippon* [illegible]*ae*	Japan (Ryukyu Islands)
Dhole (=Asiatic wild dog)	*Cuon alpinus*	Southeast Asia
Dibbler	*Antechinus apicalis*	Australia
Dugong	*Dugong dugon*	Japan
Gibbons	*Hylobates spp. (including Nomascus*	Southeast Asia
Goat, wild (=Chiltan markhor)	*Capra aegagrus (=falconen chiltanensis)*	Southwestern Asia
Goral	*Nemorhaedus goral*	East Asia
Hutia, Cabrera's	*Capromys angelcabrerai*	Cuba

Appendix 4-1 (continued)

MAMMALS, continued		
COMMON NAME	SCIENTIFIC NAME	HISTORIC RANGE
Hutia, dwarf	*Capromys nana*	Cuba
Hutia, large eared	*Capromys auntus*	Cuba
Hutia, little earth	*Capromys sanfelipensis*	Cuba
Ibex, Pyrenean	*Capra pyrenaica Pyrenaica*	Spain
Kangaroo, eastern gray	*Macropus giganteus*	Australia
Kangaroo, red	*Macropus (Megaleia) rufus*	Australia
Kangaroo, Tasmanian forester	*Macropus giganteus tasmaniensis*	Australia (Tasmania)
Kangaroo, western gray	*Macropus fuliginosis*	Australia
Leopard	*Panthera pardus*	Asia
Leopard, clouded	*Neofelis nebulosa*	Southeast and south-central Asia, Taiwan
Leopard, snow	*Panthera uncia*	Central Asia
Lion, Asiatic	*Panthera leo persica*	Turkey
Lynx, Spanish	*Felis (=Lynx) pardina*	Spain, Portugal
Macaque, Japanese	*Macaca fuscata*	Japan (Shikoku, Kyushu and Honshu Islands
Marsupial, eastern jerboa	*Antechinomys laniger*	Australia
Marsupial-mouse, large desert	*Sminthopsis psammophila*	Australia
Marsupial-mouse, long-tailed	*Sminthopsis longacaudata*	Australia
Monkey, red-backed squirrel	*Saimiri oerstedii*	Panama
Monkey, spider	*Ateles geoffroyl panamensis*	Panama
Mouse, Australian native	*Zyzomys (=Notomys) pedunculatus*	Australia

Appendix 4-1 (continued)

MAMMALS, continued		
COMMON NAME	SCIENTIFIC NAME	HISTORIC RANGE
Mouse, Australian native	*Notomys aquilo*	Australia
Mouse, Field's	*Pseudomys fieldi*	Australia
Mouse, Gould's	*Pseudomysgouldi*	Australia
Mouse, New Holland	*Pseudomys novaehollandiae*	Australia
Mouse, Shark Bay	*Pseudomys praeconis*	Australia
Mouse, Shortridge's	*Pseudomys shortridgei*	Australia
Mouse, Smoky	*Pseudomys fumeus*	Australia
Mouse, western	*Pseudomys occidentalis*	Australia
Native-cat, eastern	*Dasyurus viverrinus*	Australia
Numbat	*Mymecodius fasciatus*	Australia
Planigale, little	*Planginale ingrami subtilissima (formerly P. subtilissima)*	Australia
Possum, mountain pygmy	*Burramys parvus*	Australia
Possum, scaly-tailed	*Wyulda squamicaudata*	Australia
Quokka	*Setonix brachyurus*	Australia
Rabbit, Ryuku	*Pentalagus furnessi*	Japan (Ryuku Ilsands)
Rat, false water	*Xeromys myoides*	Australia
Rat, stick-nest	*Leporillus conditor*	Australia
Rat-kangaroo, brush-tailed	*Bettongia penicillata*	Australia
Rat-kangaroo, Gaimard's	*Bettongia gaimardi*	Australia
Rat-kangaroo, plain	*Caloprymnus campestris*	Australia
Rat-kangaroo, Queensland	*Bettongia tropica*	Australia
Seledang (=Gaur)	*Bos gaurus*	Southeast Asia
Serow	*Capricornis sumatraensis*	East Asia

Appendix 4-1 (continued)

MAMMALS, continued		
COMMON NAME	SCIENTIFIC NAME	HISTORIC RANGE
Solenodon, Cuban	*Solenodon (Atopolgale) cubanus*	Cuba
Tamaraw	*Bubalus mindorensis*	Philippines
Tarsier, Philippine	*Tarsius syrichta*	Philippines
Tiger	*Panthera tigris*	Temperate and tropical Asia
Tiger, Tasmanian	*Thylacinus cynocephalus*	Australia
Wallaby, banded hare	*Lagostrophus fasciatus*	Australia
Wallaby, brindled nail-tailed	*Onychogalea fraenata*	Australia
Wallaby, cresent nail-tailed	*Onychogalea lunata*	Australia
Wallaby, Parma	*Macropus parma*	Australia
Wallaby, western hare	*Lagorchestes hirsutus*	Australia
Wallaby, yellow-footed	*Petrogale xanthopus*	Australia
Wombat, hairy-nosed (=Barnard's and Queensland hairy-nosed	*Lasiorhinus krefftii (formerly L. barnardi and L. gillespiel*	Australia
BIRDS		
COMMON NAME	SCIENTIFIC NAME	HISTORIC RANGE
Albatross, short-tailed	*Diomedea albatrus*	Japan
Bristlebird, western	*Dasyomis brachypterus*	Australia
Bristlebird, western rufous	*Dasyomis brachypterus longirostris*	Australia
Caracara, Audobon's crested	*Polyborus plancus*	Panama, Cuba
Eagle, Philippine	*Pithecophaga jefferyi*	Philippines
Falcon, Arctic peregrine	*Falco peregrinus tundrius*	Central America
Falcon, Eurasian peregrine	*Falco peregrinus peregrinus*	Europe, Eurasia

Appendix 4-1 (continued)

BIRDS, continued		
COMMON NAME	SCIENTIFIC NAME	HISTORIC RANGE
Goose, Aleutian Canada	*Branta canadensis leucopareia*	Japan
Grasswren, Eyrean (flycatcher)	*Amytomis goyderi*	Australia
Greenshank, Nordmann's	*Tringa guttifer*	Japan
Honeyeater, helmeted	*Meliphaga cassidix*	Australia
Ibis, japanese crested	*Nipponia nippon*	Japan, Korea
Ibis, northern bald	*Geronticus eremita*	Southern Europe, southwestern Asia
Kite, Cuba hook-billed	*Chondrohierax uncinatus*	Cuba
Kite, Everglade snail	*Rostrhamus sociabilis plumbeus*	Cuba
Parakeet, orange-billed	*Neopherna chrysogaster*	Australia
Parakeet, paradise (=beautiful)	*Psephotus pulchemmus*	Australia
Parakeet, scharlet-chested (=splendid)	*Neophema splendida*	Australia
Parakeet, turquoise	*Neophema pulchella*	Australia
Parrot, Australian	*Geopsittacus occidentalis*	Australia
Parrot, Bahamian or Cuban	*Amazona leucocephala*	West Indies, Bahamas
Parrot, ground	*Pezoporus wallicus*	Australia
Pheasant, Palawan peacock	*Polyplectron emphanum*	Philippines
Pigeon, Mindoro zone-tailed	*Ducula mindorensis*	Philippines
Quetzel, resplendent	*Pharomachrus mocinno*	Panama
Scrup-bird, noisy	*Atrichornis clamosus*	Australia
Shrama, Cebu black	*Copsychus niger*	Philippines
Stork, oriental white	*Ciconia ciconia boyciana*	Japan, Korea
Wanderer, plain (collared-hemipode)	*Pedionomous torquatus*	Australia
Warbler (wood),	*Vermivora bachmanii*	Cuba

Appendix 4-1 (continued)

REPTILES		
COMMON NAME	SCIENTIFIC NAME	HISTORIC RANGE
Crocodile, Philippine	*Crocodylus novaeguineae*	Philippine Islands
Crocodile, saltwater (=estuarine)	*Crocodylus porosus*	Southeast Asia
Crocodile, Siamese	*Crocodylus siamensis*	Southeast Asia
Iguana, Cuban ground	*Cyclura nubila nubila*	Cuba
Lizard, Hierro giant	*Gallotia simonyi simonyi*	Spain (Canary Islands)
Lizard, Ibiza wall	*Podarcis pityusensis*	Spain (Balearic Islands)
Turtle, short-necked or western swamp	*Pseudemydura umbrina*	Australia
FISHES		
COMMON NAME	SCIENTIFIC NAME	HISTORIC RANGE
Ala Balik (trout)	*Salmo platycephalus*	Turkey
Ayumodoki (loach)	*Hymenophysa (=Botia) curtia*	Japan
Cicek (minnow)	*Acanthorutilus handlirschi*	Turkey
Nekogigi (catfish)	*Coreogagrus ichikawai*	Japan
Tango, Miyako (Tokyo bitterling)	*Tanakia tanago*	Japan

Appendix 4-1 (continued)

ENDANGERED/THREATENED PLANTS		
COMMON NAME	SCIENTIFIC NAME	HISTORIC RANGE
Key tree-cactus	*Cereus robinii*	Cuba
American hart's-tongue fern	*Phyllitis scolopendrium* var. *americana* (=*P. japonica* ssp. americana	Canada (Ontario)
Pitcher's thistle	*Cirsium pitchen*	Canada (Ontario)
Lakeside daisy	*Hymenoxys acaulis var. glabra*	Canada (Ontario)
Houghton's goldenrod	*Solidago houghtonii*	Canada (Ontario)
Hayun lagu (Guam), Tronkon guafi rota	*Serianthes neisonii*	Western Pacific Ocean
Dwarf lake iris	*Iris facustris*	Canada (Ontario)
Eastern prairie fringed orchid	*Platanthhera leucophaea*	Canada (Ontario, New Brunswick)
Furbish lousewort	*Pedicularis furbishieae*	Canada (New Brunswick)

INSTALLATION:	COMPLIANCE CATEGORY: NATURAL AND CULTURAL RESOURCES MANAGEMENT Worldwide ECAS	DATE:	REVIEWER(S):

STATUS NA C RMA	REVIEWER COMMENTS:

(1) Directorate Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (9) Chief of Operations and Maintenance (O&M) (12) Director of Plans, Training, Mobilization, and Security (DPTMSEC) (15) Land Management Officer (DEH) (21) Public Affairs Office (PAO) (22) Sraff Judge Advocate (31) Directorate of Personnel and Community Activities (DPCA)

Section 5

Environmental Noise Management

SECTION 5

ENVIRONMENTAL NOISE MANAGEMENT

A. Applicability of this Protocol

This protocol applies to all military communities that have aircraft operations, including airfields, ranges, military training routes (MTRs), small arms training, or other noise generating activities that could impact the environment. This protocol presents review action items that respond to mechanisms for planning operations with consideration for noise.

B. DOD Regulations

- *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992, Chapter 10 contains criteria to control environmental noise within installations.

- Department of Defense (DOD) Directive 5100.50, *Protection and Enhancement of Environmental Quality*, 24 May 1973, includes noise pollution control as one of the issues to be addressed by the DOD.

C. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990, establishes the Army's environmental noise abatement program.

D. Responsibility for Compliance

- The Installation Compatible Use Zone (ICUZ) Committee, membership of which should include, as a minimum, representatives from the installation commander, environmental management, master planning, Public Affairs Office (PAO), Staff Judge Advocate (SJA), and plans, operations, and training (range control and airfield operations). The ICUZ committee shall be responsible for: reviewing complaints; investigating and recommending mitigative actions; coordinating with the public as necessary; assessing installation activities for potential noise impacts; monitoring land development plans, programs, and projects in areas adjacent to the installation; and reviewing development of on-post activities.

E. Key Compliance Definitions

These definitions were obtained from the directives/instructions and ARs listed at the end of each definition. If there is no citation listed for the definition, it has been drawn from the U.S. Code of Federal Regulations (CFR).

- *A-Weighted Day-Night Sound Level (ADNL)* - closely resembles the frequency response of human hearing and, therefore, provides an indication of the impact of noise produced by transportation activities (OEBGD, Chapter 10, Definitions).

- *C-Weighted Day-Night Average Sound Level (CDNL)* - measures more of the low frequency components of a noise than does A-weighting. These low frequency components can cause buildings and windows to rattle and shake. The C-weighting is based on the findings of the National Academy of Sciences Committee on Hearing, Bioacoustics, and Biomechanics, and the American National Standards Institute (OEBGD, Chapter 10, Definitions).

- *DBA* - sound level in decibels, measured using the A-weighting network of a sound level meter (AR 200-1, Section II).

- *Day-Night Average Sound Level (Ldn)* - the sound exposure for a 24-hour (h) calendar day calculated by adding sound exposure obtained during daytime (0700-2200 h) to 10 times the sound exposure obtained during nighttime (0000-0700 and 2200-2400 h). The frequency weighting should be stated; otherwise, the A-weighting is assumed (OEBGD, Chapter 10, Definitions).

- *Decibel (dB)* - the unit of sound pressure is the decibel and is symbolically represented as dB. Sound pressure is the amplitude or measure of the difference between atmospheric pressure (with no sound present) and total pressure (with sound present). The decibel is a logarithmic scale (OEBGD, Chapter 10, Definitions).

- *Environmental Noise* - the outdoor noise environment consisting of the noise, including ambient noise, from all sources that extend beyond the workplace. The noise environment of the workplace is not considered environmental noise (AR 200-1, Section II).

- *Equivalent Level (LEQ)* - is the equivalent steady-state sound that, in a stated period of time, would contain the same acoustic energy as the time-varying sound during the same period (OEBGD, Chapter 10, Definitions).

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

- *Installation Compatible Use Zone (ICUZ)* - a land use planning procedure employed to control environmental noise (AR 200-1, Section II).

- *Sound Exposure Level (SEL)* - a measure of single noise events, such as ground runup. It is the level, in decibels, of the time integral of squared A-weighted sound pressure over a given time period or event, with reference to the square of the standard reference sound pressure of 20 micropascals and a reference duration of 1 second (OEBGD, Chapter 10, Definitions).

ENVIRONMENTAL NOISE MANAGEMENT

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Installations	5-1 through 5-11	(1)(10)(11)(21)

(a) CONTACT/LOCATION CODE:

(1) Directorate of Engineering and Housing (DEH)
(10) Range Control (DPTMSEC)
(11) Aviation Commander (DPTMSEC)
(21) Public Affairs Office (PAO)

ENVIRONMENTAL NOISE MANAGEMENT

Records to Review

- Facility Master Plan Document
- Complaint log from local community and followup documentation
- Contour maps (if applicable)
- ICUZ committee charter
- ICUZ reports and studies
- ICUZ committee meeting minutes
- ICUZ committee membership list

Physical Features to Inspect

- Power generating equipment
- Emergency generators
- Test tracks
- Industrial facilities
- Ranges
- Airfields/heliports/helipads
- Areas of noise/land use conflict
- Vehicle motor parks
- Rock quarry operations

People to Interview

- Directorate of Engineering and Housing (DEH)
- Range Control (DPTMSEC)
- Aviation Commander (DPTMSEC)
- Public Affairs Office (PAO)

COMPLIANCE CATEGORY: ENVIRONMENTAL NOISE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL INSTALLATIONS	
5-1. Determine actions or changes since previous review of noise management (GMP).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report. (1)
...	...
5-2. Copies of all relevant DOD directives/ instructions, ARs, and guidance documents on noise management should be maintained at the installation (GMP).	Determine if copies of following documents are maintained and kept current at the installation: (1)(11) - *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992. - DOD Directive 5100.50, *Protection and Enhancement of Environmental Quality*, 24 May 1973. - AR 95-1, *Army Aviation: Flight Regulations.* - AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990. - AR 200-2, *Environmental Effects of Army Actions*, 23 December 1988. - AR 210-70, *Intergovernmental Coordination of DOD Federal Development Program and Activities.* - DA memorandum from Director of Army Staff, *Installation Compatible Use Noise Zone Program Implementation*, 20 January, 1983. - DA memorandum from Director of Army Staff, *Installation Compatible Use Noise Zone Program Implementation*, 14 July, 1987. - TM 5-803-2, *Planning in the Noise Environment.*
...	...
5-3. Installations are required to comply with applicable MACOM regulations and substantive host nation regulations concerning noise (AR 200-1, para 1-40).	Verify that the installation is complying with applicable MACOM and host nation requirements. (1) (NOTE: Issues that are typically regulated by the MACOM or host nation agencies include: - motor vehicle noise - construction noise - community impact.)
...	...

(1) Directorate of Engineering and Housing (DEH) (10) Range Control (DPTMSEC) (11) Aviation Commander (DPTMSEC) (21) Public Affairs Office (PAO)

COMPLIANCE CATEGORY: ENVIRONMENTAL NOISE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

5-4. Installations are required to conduct an ICUZ study to identify and control noise (OEBGD, Chapter 10, Criteria 1 through 5, 7; AR 200-1, para 7-2d and para 7-5a).	Verify that an initial ICUZ program study was completed. (1)(11)(21)
	
	Verify that the ICUZ study includes the following minimum components: (1)(11)(21)
	
	- noise zone maps (up-to-date) of the installation's existing and future noise environment
	- ADNLs for transportation related noise
	- CDNLs large amplitude impulsive noise
	- at a minimum, the zones I, II, and III are shown
	- analysis of land use compatibility problems (see Appendix 5-1) and solutions to include:
	  - identification of existing incompatible land uses within zones II and III
	  - identification of possible incompatible land uses within zones II and III
	  - identification of desirable land uses within zones II and III
	- ICUZ public involvement plan
	- review of installation master plans to ensure that existing and future facility siting is consistent with the noise environment
	- identification of noise sources that create impact, investigation of possible mitigations, and programming of resources to reduce noise impacts.
	
	Verify that the ICUZ study is being updated at least every 5 years (yr), or whenever significant noise producing operations change. (1)(10)(11)
	
	(NOTE: Installations without significant noise sources, such as ranges, airfields, or industrial operations, are exempt from this requirement and must prepare a single page ICUZ statement of negligible impact (AR 200-1, para 7-5g, h(3)).)

...	...
5-5. The siting and conduct of ground run-up must be evaluated for low frequency vibration as well as general audible noise (OEBGD, Chapter 10, Criteria 6).	Verify that the conduct of ground run-up is evaluated for both low frequency vibration and general audible noise. (1)(10)(11)
...	...

(1) Directorate of Engineering and Housing (DEH) (10) Range Control (DPTMSEC) (11) Aviation Commander (DPTMSEC) (21) Public Affairs Office (PAO)

COMPLIANCE CATEGORY: ENVIRONMENTAL NOISE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
5-6. Each installation is required to establish an ICUZ committee (AR 200-1, para 7-1b and para 7-5b).	Verify that an ICUZ committee has been developed that includes representatives from the following: (1)(11) - installation commander - environmental manager - master planning - public affairs - staff judge advocate - range control and airfield operations. Verify that the ICUZ committee: (1)(11) - meets at least semi-annually - reviews the ICUZ study annually - reviews noise complaints - investigates and recommends mitigative action - assesses installation for possible noise impacts - monitors land development plans and projects in area adjacent to installation - reviews development of on-post facilities - coordinates with the public (as appropriate) - coordinates with public officials regarding off-post development bordering the installation. (NOTE: Installations may be exempt from this requirement if functions of the ICUZ committee are incorporated into the Environmental Quality Control Committee as outlined in AR 200-1, para 12-13.)
...	...
5-7. Assessment of helicopter noise must include a distance factor and specific factor to account for the special character of helicopter noise (AR 200-1, para 7-5c(2)).	Verify that the following dB factors are included in the assessment of helicopter noise on the installation: (1)(11) Slant distance(m) Factor(dB) 0-200 7 200-300 5 300-400 3 400-500 1 500 + 0 Verify that, if helicopters, or other impulse noise sources that have frequency energy sufficient to rattle windows or other building elements are present at the installation, that two sets of noise zone maps are developed, one with and one without the penalty factors listed above that will illustrate areas where rattle-proofing techniques should be used as a mitigative technique in existing facilities and new construction. (1)(11)
...	...

(1) Directorate of Engineering and Housing (DEH) (10) Range Control (DPTMSEC) (11) Aviation Commander (DPTMSEC) (21) Public Affairs Office (PAO)

COMPLIANCE CATEGORY: ENVIRONMENTAL NOISE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

5-8. Installations must attempt to minimize environmental noise (AR 200-1, para 7-2e).	Determine whether or not noise levels are being reduced using: (1)(10)(11)
	
	- noise reduction engineering
	- administrative and operational controls
	- appropriate siting and design of facilities and ranges
	- development and procurement of weapons systems and other military combat equipment that produce less noise
	- procurements of commercially manufactured products that produce less noise
	- appropriate land use controls, including:
	  - assisting in the development of protective off-post land use planning
	  - assisting in the development of protective off-post structural requirements to mitigate noise impacts
	  - controlling land use through easements
	  - developing protective on-post land-use planning
	  - developing protective on-post structural requirements to mitigate noise impacts.

...	...
5-9. On-site monitoring is required if zone III extends off the installation or a significant noise controversy exists (AR 200-1, para 7-5(d)).	Verify that monitoring has been or is being performed. (1)(11)(21)
...	...

5-10. Installations are required to maintain operational data on noise producing activities (OEBGD, Chapter 10, Criteria 8; AR 200-1, para 7-5f).	Verify that noise operational data required to develop noise contour maps are being maintained, including: (1)(10)(11)
	
	- for impulsive noise (25 mm ordnance or greater):
	  - location of firing points
	  - location of target areas
	  - location of demolition areas
	  - number of rounds fired at each firing point by type and time of day
	  - propellant charge to each target
	- for aircraft noise:
	  - location of flight track
	  - altitude of aircraft along flight track
	  - number of operations along each flight track by type of aircraft and time of day
	- for small arms noise:
	  - location of range
	  - location of firing points
	  - direction of firing
	  - type of small arm/weapon fired.
	
	Verify that operational data covers 1 yr. (1)(10)(11)

...	...

(1) Directorate of Engineering and Housing (DEH) (10) Range Control (DPTMSEC) (11) Aviation Commander (DPTMSEC) (21) Public Affairs Office (PAO)

COMPLIANCE CATEGORY: ENVIRONMENTAL NOISE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
5-11. Installations must institute a noise complaint procedure (OEBGD, Chapter 10, Criteria 7 and AR 200-1, para 7-3).	Verify that a noise complaint procedure has been instituted that ensures the following: (1)(10)(11)(21) - a log is maintained of all noise complaints - complaints are investigated without delay - copies of complaints are routed to the office responsible for the type of activity that resulted in the noise complaint - the PAO responds to the complainant. Verify that the ICUZ committee is provided with a copy of the complaint and followup. (1)(11) Verify that noise-generating activity responds to the PAO concerning all complaints and does a followup by identifying the cause of the noise and any action taken to correct the deficiency. (1)(11)

(1) Directorate of Engineering and Housing (DEH) (10) Range Control (DPTMSEC) (11) Aviation Commander (DPTMSEC) (21) Public Affairs Office (PAO)

Appendix 5-1

Acceptable Land Uses And Minimum Building Sound Level Requirements

Facility	Outdoor Noise Environment (Ldn/Leq in dB)				
	85-89	80-84	75-79	70-74	65-69
Family housing	No	No	No	NLR30(4)	NLR25(4)
Bachelor housing	No	No	NLR35(4)	NLR30(4)	NLR25(4)
Transient Lodging - Hotel, Motel, etc.	No	No	NLR35(4)	NLR30(4)	NLR25(4)
*Classrooms, Libraries, Churches	No	No	No	NLR30	NLR25
*Offices & Administration Buildings - Military	NLR40	NLR35	NLR30	NLR25	Yes
*Offices - Business and Professional	No	No	NLR30	NLR25	Yes
Hospitals, Medical Facilities, Nursing Homes (24-h occupancy)	No	No	No	NLR30	NLR25
*Dental Clinic, Medical Dispensaries	NLR40	NLR35	NLR30	NLR25	Yes
*Outdoor Music Shells	No	No	No	No	No
*Commercial and Retail Stores, Exchanges, Movie Theaters, Restaurants and Cafeterias, Banks, Credit Unions, Enlisted Member (EM)/Officer Clubs	No	No	NLR30	NLR25	Yes
*Flight Line Operations, Maintenance and Training	NLR35(5)	NLR30(5)	Yes	Yes	Yes
*Industrial, Manufacturing and Laboratories	No	NLR35(5)	NLR30(5)	NLR25(5)	
*Outdoor Sports Arenas, Outdoor Spectator Sports	No	No	No	Yes(1)	Yes(1)
*Playgrounds, Active Sport Recreational Areas	No	No	No	Yes	Yes
*Neighborhood Parks *Gymnasiums, Indoor Pools	No No	No NLR30	No NLR25	Yes Yes	Yes Yes

Appendix 5-1 (continued)

Facility	Outdoor Noise Environment (Ldn/Leq in dB)				
	85-89	80-84	75-79	70-74	65-69
*Outdoor - Frequent Speech Communication	No(2,3)	No	(2,3)	No	No
*Outdoor - Infrequent Speech Communication	No	(2,3)	No	(2,3)	Yes
Livestock Farming, Animal Breeding	No	No	No	Yes	Yes
*Agricultural (except livestock)	Yes(3)	Yes(3)	Yes	Yes	Yes

*For detailed design, the Leq for the appropriate period of usage is the preferred measured of the noise environment.

Yes - land use compatible with noise environment. No special noise control restriction. Normal construction appropriate.

NLR - Appropriate noise level reduction where indoor activities predominate.

No - Land use not compatible with noise environment, even if special building noise insulation provided.

KEY:

1. Land use is acceptable provided special sound reinforcement systems are installed.

2. Land use may be acceptable provided special speech communication systems are used.

3. Land use may be acceptable provided hearing protection devices are worn by personnel. Check applicable hearing damage regulations.

4. Although it is recognized that local conditions may require residential uses in these areas, this use is strongly discouraged in Ldn 70-74 and Ldn 75-79 and discouraged in Ldn 65-69. The absence of viable alternative development options should be determined. NLR criteria will not eliminate outdoor environment noise problems and, as a result, site planning and design should include measures to minimize this impact particularly where the noise is from ground level sources.

5. The LDR must only be incorporated into the design and construction of portions of these buildings where the public is received, office areas, and noise sensitive work areas of where the normal noise level is low.

INSTALLATION:	COMPLIANCE CATEGORY: ENVIRONMENTAL NOISE MANAGEMENT Worldwide ECAS	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) Directorate of Engineering and Housing (DEH) (10) Range Control (DPTMSEC) (11) Aviation Commander (DPTMSEC) (21) Public Affairs Office (PAO)

Section 6

Pesticide Management

SECTION 6

PESTICIDE MANAGEMENT

A. Applicability of this Protocol

This protocol applies to any Army facility that uses, stores, or handles pesticides. This protocol integrates the requirements of Department of Defense (DOD) regulations and Army regulations (ARs) into a single document that normally will apply to any facility that handles pesticides.

Much of the guidance for pest management involves Operation and Maintenance (O&M) procedures. This protocol combines O&M guidance and compliance matters. It is used to determine the compliance status of operations, facilities, and equipment used to store and apply pest control chemicals. The protocol addresses the adequacy of facilities, operating procedures, personnel qualifications, and reporting of pesticide use.

B. DOD Regulations

- *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992, Chapter 11, contains criteria regulating the use, storage, and handling of pesticides, herbicides, and defoliants at DOD installations but does not address the use of these items by individuals acting in an unofficial capacity in a residence or garden.

- DOD Directive 4150.7, *Pest Management Program*, 24 October 1983, sets forth the policy, responsibilities, and procedures for pest management programs. This directive establishes the DOD policy of maintaining safe, efficient, and environmentally sound integrated pest management programs to prevent or control pests that may adversely affect health or damage structures, material, or property. The "DOD Plan for the Certification of Pesticide Applicators" stipulates the certification of military and civilian pest managers.

- DOD Directive 4150.7, is supplemented by Technical Information Memoranda (TIM) that provide specific criteria and procedures for the operation of: *Pesticide Spill Prevention and Management*, addressing cleanup procedures for pesticide spills; TIM 17, *Pest Control Facilities*, providing guidance for the design, layout, operation, and location of pest control facilities; and TIM 18, *Guide for Military Community Pest Management On-Site Reviews*, providing a partial list of items that should be checked when assessing the efficiency of pest management programs.

C. Army Regulations

- AR 200-1, *Environmental Protection and Enhancement*, prescribes responsibilities, policies, and procedures to preserve, protect, and restore the quality of the environment.

- AR 420-76, *Pest Management*, provides policies, standards, and procedures for pest control activities at Army controlled facilities. It sets minimum levels of pest management operations in real property maintenance activities (RPMA).

D. Responsibility For Compliance

- The Directorate of Engineering and Housing (DEH) will prepare a pest management plan, supervise and direct pest management operations, conduct preventive maintenance and surveillance inspections, ensure that operating personnel are adequately trained, maintain supplies of pesticides and related equipment, and assure that all pest management operations are done safely. In addition, the Facilities Engineer will decide which activities should be contracted out, perform all recordkeeping and reporting requirements of AR 420-76, notify heads of nonappropriated funds activities that restricted and controlled pesticides must be applied under supervision of certified personnel, and cooperate with medical authorities.

- Preventive Medicine (PVNTMED) will conduct the installation pesticide monitoring program, obtain timely identification and susceptibility of pests to pesticides as necessary and report to the facilities engineer, establish health and personnel safety criteria for pesticide operation, provide certification training, and assist the Major Army Command (MACOM) pest management consultation in conducting an on-site installation pest management program review.

- The Installation Pest Management Coordinator will be a pest management supervisor or member of the professional pest management personnel, will develop and monitor the installation pest management annual work plan, and will coordinate with activities conducting pest surveillance or applying pesticides to ensure that all applicable information is reported per AR 420-76.

E. Key Compliance Definitions

These definitions were obtained from the directives/instructions and ARs listed at the end of each definition. If there is no citation listed for the definition it has been drawn from the U.S. Code of Federal Regulations (CFR).

- *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.

- *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 definition of *toxicity category*).

- *Certified Pesticide Applications* - personnel who apply pesticides or supervise the use of pesticides and who have been authorized to do so by successfully completing a training program approved by the United States Environmental Protection Agency (USEPA), followed by formal certification (OEBGD, Chapter 11, Definitions).

- *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 definition of *toxicity category*).

- *Direct Supervision* - supervision by a certified pesticide application at the specific location where the work is conducted, while maintaining a line-of-sight view of the work performed (AR 420-76, Glossary).

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

- *Integrated Pest Management* - the management of actual and potential pest problems using a combination of available preventive and corrective control measures (AR 200-1, Glossary).

- *Pesticide* - any substance or mixture of substances used to destroy pests, control their activity, or prevent them from causing damage (OEBGD, Chapter 11, Definitions).

- *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.

- *Pesticide Waste* - materials that are subject to pesticide disposal restrictions and should be treated as excess pesticides for purposes of disposal:
  1. any pesticide that has been suspended, contaminated, improperly mixed, is off-specification or otherwise unusable, whether concentrated or diluted
  2. used spill cleanup material

3. any container, equipment, or material that is contaminated with pesticides; empty pesticide containers that have been triple rinsed are not considered hazardous waste but are normal solid waste (OEBGD, Chapter 11, Definitions).

- *Restricted Use Pesticides* - (also restricted pesticide), a pesticide that has been determined to merit additional restrictions by either the United States or the host nation because it would cause unreasonable adverse effects on health or the environment (OEBGD, Chapter 11, Definitions).

- *Specially Designated Landfill* - a landfill where complete long-term protection is provided for the quality of surface and subsurface waters from pesticides, pesticide containers, and pesticide-related wastes, and against hazards to public health and the environment, including a chemical waste landfill (OEBGD, Chapter 11, Definitions).

- *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.

- *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."

PESTICIDE MANAGEMENT

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All installations that apply, store, mix, prepare, or dispose of pesticides	6-1 through 6-13	(1)(2)(4)(16)(17)(22)(33)
Pesticide application	6-14 through 6-21	(2)(3)(4)(15)(16)(17)(33)
Installations with facilities that store, mix, or prepare pesticides	6-22 through 6-40	(2)(4)(5)(17)(33)
Pesticide waste disposal	6-41 through 6-43	(2)(4)(16)(17)(33)

(a)CONTACT/LOCATION CODE:

(1) Directorate of Engineering and Housing (DEH)
(2) Environmental Coordinator (EC)
(3) Health Physician/Preventive Medicine Officer
(4) Safety and Health Officer
(5) Golf Course Maintenance
(15) Land Management Officer (DEH)
(16) Building and Grounds Division (DEH)
(17) Entomology Shop (DEH)
(22) Staff Judge Advocate
(33) Golf Course Pesticide Shop

PESTICIDE MANAGEMENT

Records to Review

- Records of pesticides purchased by the facility (purchase orders, inventory)
- Pesticide application records
- Description of the facility's pest control program
- Installation pest management plan
- Certification status of pesticide applicators
- Pesticide disposal manifests
- Any emergency exemption granted to the Federal agency by the USEPA
- Contracts for pest management
- Recent ventilation rating for pesticide fume hood and pesticide mixing/storage rooms
- Staffing requirements for pest management program

Physical Features to Inspect

- Personnel protection equipment
- Pesticide application equipment
- Pesticide storage areas, including storage containers
- Military unit storage/supply areas
- DEH/DOL supply and storage areas
- Field sanitation training sites

People to Interview

- Directorate of Engineering and Housing (DEH)
- Health Physician/Preventive Medicine Officer
- Golf Course Maintenance
- Land Management Officer (DEH)
- Safety and Health Officer
- Environmental Coordinator (EC)
- Building and Grounds Division (DEH)
- Entomology Shop (DEH)
- Staff Judge Advocate
- Golf Course Pesticide Shop

COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL INSTALLATIONS	
6-1. Determine actions or changes since previous review of the pest management program (GMP).	Review previous report and determine the status of noncompliance issues identified. (2) (NOTE: The term "pesticide" refers to insecticides, rodenticides, herbicides, and other pest control chemicals.)
...	...
6-2. Copies of all relevant DOD directives/ instructions, ARs, and guidance documents on pesticides should be maintained at the installation (GMP).	Verify whether copies of the following regulations are kept at the installation: (2)(16)(17)(22) - *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992. - DOD 4145.19-R-1, *Storage and Materials Handling*, September 1979 - DOD Directive 4150.7, *Pest Management Program*, 24 October 1983. - DOD 4160.21-M, *Hazardous Property Management*, 28 January 1985. - AR 11-34, *The Army Respiratory Protection Program*, 15 February 1990. - AR 40-5, *Preventive Medicine*, 15 October 1990. - AR 40-574, *Aerial Dispersal of Pesticides*, 26 April 1976. - AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990. - AR 385-10, *The Army Safety Program*, 23 May 1988 - AR 385-32, *Protective Clothing and Equipment*, 31 October 1985 - AR 420-76, *Pest Management*, 3 June 1986. - TIM No.14, *Protective Equipment for Pest Control Personnel.* - TIM No.15, *Pesticide Spill Prevention and Management.* - TIM No.16, *Pesticide Fires: Prevention, Control and Cleanup.* - TIM No.17, *Pest Control Facilities.* - TIM No.21, *Pesticide Disposal Guide for Pest Control Shops.*
...	...
6-3. Installations are required to comply with applicable MACOM regulations and substantive host nation regulations concerning pesticides (AR 200-1, para 1-40).	Verify that the installation is complying with the applicable MACOM and host nation requirements. (1) (NOTE: Issues that are typically regulated by the MACOM or host nation agencies include: - certification of applicators - restricted use pesticides - application procedures - storage and transportation of pesticides - disposal methods.)
...	...

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Health Physician/Preventive Medicine Officer (4) Safety and Health Officer (5) Golf Course Maintenance (15) Land Management Officer (DEH) (16) Building and Grounds Division (DEH) (17) Entomology Shop (DEH) (22) Staff Judge Advocate (33) Golf Course Pesticide Shop

COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-4. The installation must have a Pest Management Coordinator (AR 420-76, para 2-4e and para 2-8).	Determine if a person has been designated to coordinate all installation pest management activities. (2)(4) Verify that this person is responsible for preparation of the pest management plan and the collection of the information necessary to prepare the DD Form 1532. (2)(4) Verify that this person oversees performance of pest control contracts. (2)(4)
...	...
6-5. Each Army installation must have a comprehensive Installation Pest Management Plan (IPMP) (OEBGD, Chapter 11, Criteria 1; AR 420-76, para 2-5a).	Determine if an IPMP has been prepared. (2)(4)(17) Verify that all installation activities and satellite sites that perform pest control have been included in the IPMP. Examples include: (2)(4) - Land Management Section - Forestry Section - Fish and Wildlife Section - Golf Course Grounds Maintenance - Grounds Section - Contract Pest Control - Greenhouses - Airfield Management - Clubs. Verify that the IPMP has been reviewed and approved by the appropriate MACOM Pest Management Consultant (PMC). (2)(4) Verify that the IPMP has been updated during the past year. (2)(4) (NOTE: A plan is required whether the pest management operations are in-house or contractual.)
...	...
6-6. The IPMP must address specific issues (AR 420-76, para 3-2b, Appendix C, and DOD Directive 4150.7, para F5).	Determine if the IPMP contains a pest control worksheet for each pest control function. (2)(4) Verify that each pest control worksheet contains: (2)(4) - objectives of control - surveillance on which control is based - control operations to be performed - precautions to be taken in sensitive areas - special health and safety measures required - work force requirements. Determine if the IPMP emphasizes integrated pest management procedures rather than spray schedules. (2)(4)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-7. DD Form 1532, Pest Management Report, must be submitted monthly or according to MACOM requirements (AR 420-76, para 4-4c(1), 4-4c(3) through 4-4c(5)).	Determine if DD Form 1532, which reports pest control operations and pesticide use, is prepared monthly. (2)(4)(17) Verify that the DD Form 1532 includes ALL installation pest control operations. (2)(4)(17) Verify that the DD Form 1532 records surveillance time (engineer, veterinarian, and PVNTMED officer). (2)(4)(17) Verify that a copy of DD Form 1532 is sent to: (2)(4)(17) - MACOM PMC - Installation PVNTMED Officer - United States Army Environmental Hygiene Agency (USAEHA).
...	...
6-8. Contracts for installation pest control services must be reviewed and approved prior to advertisement for bid (AR 420-76, para 3-12c and d, 4-3a and c, 3-4k).	Determine if contracts for pest control services have been approved (preferably in writing) by the MACOM PMC. (2)(17) Verify that contract pest control services are monitored by a DOD trained and certified Quality Assurance Evaluator (QAE). (2)(17) Verify that contractor employees are certified (DOD certification is not required) to apply pesticides. (2)(17)
...	...
6-9. Installations are required to use approved pesticides (OEBGD, Chapter 11, Criteria 4).	Verify that pesticides that are used at the installation are approved for stocking by the Armed Forces Pest Management Board or approved in writing by the cognizant DOD pest management authority. (2)(17)
...	...
6-10. Labels on pesticides are required to bear the appropriate use instructions and precautionary measures (OEBGD, Chapter 11, Criteria 8).	Verify that the pesticides are labeled, and if foreign nationals are using the pesticides, labels are provided in both English and the host nation language. (2)(17)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-11. A self-help pest control program must be available for use by housing occupants to control minor infestations of household pests (AR 420-76, paras 2-3m, 3-13 and Appendix G).	Determine if a self-help pest control program has been established. (2)(4)(17) Determine if housing occupants must make a self-help pest control effort before services from the installation pest control services are scheduled. (2)(4)(17) Verify that the pesticides being distributed by self-help have been approved by the MACOM PMC. (2)(4)(17) Verify that records are being maintained of pest control supplies issued and are provided to the pest management coordinator once a month to be included on the DD Form 1532-1. (2)(4)(17)
...	...
6-12. The impact of the installation pest management program must be addressed in the installation Environmental Assessment (EA) or Environmental Impact Statement (EIS) (AR 200-2, para 5-3c, AR 420-76, para 3-10).	Determine whether the current installation EA or EIS addresses pest management operations. (2) Verify that EAs are on file for pest management operations that: (2) - use a restricted use pesticide - may have the potential to contaminate surface or groundwater - treat more than 256 contiguous hectares (640 acres) - may affect endangered, threatened, or protected species or their habitat. Verify that an EA and validation statement have been prepared in accordance with AR 40-574 before the aerial dispersal of pesticides. (2) Verify that if the installation does not have a current EA or EIS, the environmental impacts of pest management operations are being addressed as part of the IPMP. (2)
...	...
6-13. Facilities are required to dispose of or store any pesticide, pesticide container, or pesticide residue according to specific restrictions (AR 420-76, para 4-2a(2)).	Verify that pesticides, pesticide containers, and/or pesticide residues are stored and/or disposed of so that: (2)(4)(17)(33) - they are 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 - food or feed contamination does not occur - water dumping or ocean dumping does not occur.
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
PESTICIDE APPLICATION	
6-14. Application of general use pesticides must be conducted by a person who is trained and/or certified in the application of pesticides. People applying restricted use pesticides must be certified to apply restricted use pesticides (OEBGD, Chapter 11, Criteria 2 and 11; DOD Directive 4150.7, para F1 and F2, AR 420-76, para 3-1).	Verify that applicators are trained and/or certified if they: (2)(3)(4)(16)(17)(33) - are full time employees who perform pest management activities at least 25 percent of their on-duty time - apply restricted use or controlled pesticides. Verify that training recertification is scheduled and performed as required to maintain certification and that certification is relevant to the pest management activities undertaken. (2)(3)(4)(16)(17)(33) Verify that if contractors are utilized for pest management, they are certified as needed. (2)(3)(4)(16)(17)(33) Verify that the installation has the appropriate number of certified pesticide applicators required to perform pest management operations at the installation (see Appendix 6-1). (2)(3)(4)(16)(17)(33) Verify that restricted use pesticides are applied under the supervision of a certified applicator. (2)(3)(4) (NOTE: Appendix 6-2 contains a list of U.S. restricted use pesticides: host nation restricted use pesticide lists must be consulted.)
...	...
6-15. All government pest control personnel must be participating in a medical surveillance program (OEBGD, Chapter 11, Criteria 3; AR 40-5, para 10-15).	Determine if all government pesticide applicators are participating in a medical surveillance program. (2)(3)(4)(17) (NOTE: Contract pesticide applicators should be in a medical surveillance program provided by their employer.) Verify if the medical surveillance consists of, at a minimum: (2)(3)(4)(17) - annual physical - quarterly physicals and blood cholinesterase tests if the applicator is working with organophosphate or carbamate pesticides (otherwise it is annual).
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-16. Personal protective equipment and clothing must be provided at employer (Army or contractor) expense (OEBGD, Chapter 11, Criteria 7; AR 11-34, para 3-5b(2), AR 385-32, para 4a, AR 420-76, para 4-1c; DOD Directive 4165.19-R-1, para 3-415a).	Determine if personal protective clothing and equipment is provided and used by pest management personnel. The following equipment depends upon magnitude and type of operations: (2)(3)(4)(17) - respirators - masks - gloves - safety shoes - coveralls - specialized personal protective equipment for fumigation. Verify that health and safety procedures emphasizing good work habits, reduction or elimination of hazards, and use of personal protective equipment are followed. (2)(4)(17) Verify that laundering of protective clothing is provided by the installation (or employer). (2)(4)(17) Verify that protective clothing and equipment is stored separately from chemical areas. (2)(4)(17) Verify that appropriate/approved respirators are used when handling and applying pesticides. (2)(4)(17) Verify that respirator cartridges/canisters are changed at appropriate intervals. (2)(4)(17) Verify that a log of respirator cartridge/canister use is maintained. (2)(4)(17) Verify that periodic fit testing of respirators is conducted. (2)(4)(17)
...	...
6-17. Copies of material safety data sheets (MSDSs) for all pesticides must be available at the storage and holding facility (OEBGD, Chapter 11, Criteria 15; AR 200-1, para 1-24a(3)(a).)	Determine if MSDSs are available for review by employees upon request. (2)(4)(17)
...	...
6-18. Vehicles used for pesticide applications must be dedicated to pest control operations and meet specific design requirements (AR 420-76, para 4-1d and 4-1e(1) and DOD 4145.19-R-1, para 3-415a(3)).	Determine if vehicles used during pest control operations are single purpose. (4)(17)(33) Verify that pest control vehicles have separate cab and cargo compartments. (4)(17)(33) Verify that lockable storage is provided on the vehicles. (4)(17)(33) Verify that spill cleanup kits are placed on vehicles. (4)(17)(33)

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-19. Daily pesticide application and surveillance records are required (AR 420-76, para 4-4b).	Verify that DD Form 1532-1 is used to account for daily applications of pesticides. (4)(17)(33)
...	...
6-20. Public safety should be ensured when applying or using pesticides (GMP).	Verify that hazardous exposure to the general public is eliminated by checking for the following: (4)(15)(16)(17) - appropriate signs for treatment area are posted - low use periods or restricted usage are scheduled for a number of days - water use restrictions and reentry times are followed according to the pesticide labels.
...	...
6-21. Pesticides for sale in post exchanges and commissaries must meet specific restrictions (AR 40-5, para 1-4h).	Verify that pesticides for sale in post exchanges and commissaries are registered as "General Use" pesticides. (2)(4) Verify that no "Restricted Use" pesticides or pesticides with labels indicating that only professional pest management personnel may use the product are sold in the post exchange or commissary (see Appendix 6-2). (2)(4) Verify that the pesticides are arranged separately on sales display shelves and in storage according to type. (2)(4) Verify that pesticides are segregated from all food products. (2)(4)
...	...
STORE, MIX, OR PREPARE PESTICIDES	
6-22. Pesticide storage areas are required to have a readily visible, current inventory of all items in storage (OEBGD, Chapter 11, Criteria 10).	Verify that the inventory indicates all items in storage and items awaiting disposal. (2)(4)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-23. When pesticides are present in quantities that would be harmful to human health or the environment if a spill occurred, the pesticide storage and mixing facility must be included in the Spill Prevention Control and Countermeasure (SPCC) Plan (AR 200-1, para 8-4a(2)(d)).	Determine if the SPCC Plan identifies the pesticide storage facility and addresses measures to prevent or minimize impact of a pesticide spill at the facility. (2)(4)(17) Verify that the SPCC Plan includes an inventory of pesticides stored in the pesticide storage facility. (2)(4)(17)
...	...
6-24. Stored pesticides must be addressed in the Installation Spill Contingency Plan (ISCP) (OEBGD, Chapter 11, Criteria 5; AR 200-1, para 8-5).	Determine if the ISCP addresses procedures and techniques used to contain and cleanup a pesticide spill at the pesticide storage facility. (2)(4)(17)
...	...
6-25. Pest management facilities, including mixing and storage areas, are required to comply with the design, construction, and storage standards in Military Handbook 1028-8A (OEBGD, Chapter 11, Criteria 6 and 9).	Determine if appropriate standards are met by reviewing Military Handbook 1028-8A. (2)(4)
...	...
6-26. Pesticide storage areas are required to be regularly inspected and secured to prevent unauthorized access (OEBGD, Chapter 11, Criteria 10).	Verify that storage areas are inspected regularly and secured to prevent unauthorized access. (2)(4)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-27. Storage sites where pesticides and excess pesticides classed as highly toxic or moderately toxic and labeled DANGER, POISON, WARNING, or with the skull and crossbones must meet specific requirements (AR 420-76, para 4-1b(1)).	Verify that the site location, where possible, is in an area where flooding is unlikely and where hydrogeologic conditions prevent contamination of any water system by runoff or percolation by: (4)(17)(33) - inspecting area surrounding facilities and determine proximity to surface water - noting location relative to floodplains, depth of ground water, and general soil types and typical permeabilities. Verify that, when needed, drainage from the site is contained by natural or artificial barriers or dikes. (4)(17)(33) (NOTE: Storage areas must also meet the general requirements for the storage of hazardous materials found in Section 2: *Hazardous Materials Management.*)
...	...
6-28. An environmental monitoring system must be considered in the vicinity of pesticide storage facilities when there is no spill management system and the facility handles large quantities of pesticides and is located near a sensitive area (AR 420-76, para 4-1b(1)).	Determine if the site appears to be contaminated with pesticides and if there is a need for an environmental monitoring system. (4)(17)(33)
...	...
6-29. Storage facilities for pesticides and excess pesticides classed as highly toxic or moderately toxic and labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol must meet specific structural requirements (AR 420-76, para 4-1b(1) and 4-1b(2)).	Verify that storage is in a dry, well-ventilated, separate room, building, or covered area where fire protection is provided. (4)(17)(33) Verify that the storage area is protected from freezing temperatures and direct sunlight. (4)(17)(33) Verify that the entire storage facility is secured by a climb-proof fence and that doors and gates are kept locked to prevent unauthorized entry. (4)(17)(33) (NOTE: Storage areas must also meet the general requirements for the storage of hazardous materials found in Section 2: *Hazardous Materials Management.*)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-30. The storage of pesticides and excess pesticides classed as highly toxic or moderately toxic and labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol must meet specific operational requirements (AR 420-76, para 4-1b(1) and 4-1b(2)).	Verify that: (4)(17)(33) - pesticide containers are stored with the labels plainly visible - all containers are in good condition - the lids and bungs on metal or rigid plastic containers are tight - the pesticides are segregated with 4-foot (ft) aisles and, if practicable, stored under a sign containing the name of the formulation - rigid containers are stored upright, and all containers are stored off the ground. Verify that a complete inventory is kept to indicate the number and identity of containers in a storage unit. (4)(17)(33) Verify that containers are inspected monthly for corrosion and leaks and that absorbent material is available for spill cleanup. (4)(17)(33) Verify that excess pesticides and containers are segregated. (4)(17)(33) (NOTE: Storage of pesticides must also meet the general requirements for the storage of hazardous materials found in Section 2: *Hazardous Materials Management.*)
...	...
6-31. Decontamination facilities are required for personnel and equipment at installations using pesticides classed as highly toxic or moderately toxic and labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol (AR 420-76, para 4-1b(1)).	Verify that facilities are available for personnel decontamination. (4)(17)(33) Verify that facilities are available for the decontamination of equipment, including vehicles that have been used for pesticide applications. (4)(17)(33) Verify that berms, curbing, impervious surfaces, and catchment drains that are used to impound washwater resulting from decontamination do not allow leakage. (4)(17)(33) Verify that drains that impound wash water do not connect to sanitary sewer or stormwater systems. (4)(17)(33) Verify that the procedure for disposal of washwater resulting from decontamination activities is the same as for excess pesticides. (4)(17)(33)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-32. Storage/usage facilities for pesticides classed as highly toxic or moderately toxic and labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol are required to follow specific practices and procedures to ensure safety (AR 420-76, para 4-1b(1)).	Verify that no food consumption, drinking, smoking, or tobacco use is undertaken in any area where pesticides are present. (4)(17)(33) Verify that the following practices are performed in pest management operations: (4)(17)(33) - people handling pesticides keep hands away from mouths and eyes and wear rubber gloves during all pesticide handling - people handling pesticides wash hands immediately upon completion of working with pesticides and always prior to eating, smoking, or using toilet facilities - people handling concentrated pesticides wear protective clothing that is removed if found to be contaminated - people working regularly with organophosphates and N-alkyl carbamate pesticides have periodic physical examinations, including cholinesterase tests - a stock of protective clothing is available - self-contained breathing apparatus and impermeable suits are available when handling pesticides that may be 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. (NOTE: Pesticide handling must also meet the general requirements for the handling of hazardous materials found in Section 2: *Hazardous Materials Management.*)
...	...
6-33. Pesticide storage facilities and equipment that contain or use pesticides classed as highly toxic or moderately toxic and labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol are required to have signs and safety procedures posted (AR 420-76, para 4-1b(1) and para 4-1b(3)).	Verify that signs which read DANGER, POISON, or PESTICIDE STORAGE are posted on or near entries to storage facilities. (4)(17)(33) Verify that safety precautions and accident prevention measures are posted. (4)(17)(33) Verify that an inventory of pesticides is displayed outside of the storage facility identifying all chemicals in storage. (4)(17)(33) Verify that mobile equipment used for pesticide applications is labeled CONTAMINATED WITH PESTICIDES. (4)(17)(33)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-34. 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 where other conditions warrant, the local fire department, hospitals, public health officials, and police department must, in the event of a fire, be notified in writing that pesticides are being stored (AR 420-76, para 4-1b(1)).	Verify that notification has been submitted and includes a statement of the hazards that pesticides may present during a fire. (2)(4)(5) Verify that a floor plan of the storage facility, indicating the location of the different pesticide classifications, has been submitted to the fire department. (4)(5) Verify that the fire chief has the home telephone numbers of the person(s) responsible for the pesticide storage facility. (4)(5)
...	...
6-35. Pre-fire plans for pesticide storage areas are required to be updated annually (AR 420-76, para 4-1f).	Verify that the pesticide management coordinator has a pre-fire plan and that it is updated annually. (4)(17)
...	...
6-36. Certain precautions are to be taken in the event of a fire at a pesticide storage area where pesticides are classed as highly toxic or moderately toxic and labeled DANGER, POISON, WARNING, or with the skull and crossbones symbol (AR 420-76, para 4-1b(1)).	Verify, by interviewing the fire chief, that the following procedures are practiced: (4)(5) - fire fighting personnel wear supplied air suits and rubberized clothing - personnel avoid breathing or otherwise contacting toxic smoke and fumes - personnel wash completely as soon as possible after encountering smoke and fumes - water used in fire fighting is contained within the storage site drainage system - individuals who might be threatened by the fumes/smoke are evacuated - firemen take cholinestrase tests after fighting fires involving organophosphate or N-alkyl carbamate pesticides.
...	...
6-37. Pesticides in deteriorated or leaking containers must be repackaged or overpacked in approved containers (AR 240-76, para 4-2c).	Verify that leaking pesticide containers are repackaged or overpacked to prevent further leakage. (4)(17)(33)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
6-38. A pesticide spill cleanup kit must be strategically located where pesticides are stored and mixed (AR 420-76, para 4-1e(1)).	Determine if a pesticide spill cleanup kit is available to cleanup and detoxify spills in the pesticide storage facility. (4)(17)(33)
...	...
6-39. Suitable facilities for emergency decontamination should be available for immediate emergency use within the pesticide storage/mixing facility (GMP).	Determine if an emergency shower and eye wash are present in the pesticide storage facility. (4)(17)(33)
...	...
6-40. A changing room should be provided for pest control personnel to change into protective clothing (GMP).	Determine if the pest control facility has a changing room. (4)(17)(33) Verify if adequate personnel locker space is provided (one to contain clean protective clothing and personnel clothing and another for contaminated clothing). (4)(17)(33) Verify that a hot water shower is available for personnel to use at the end of the duty day. (4)(17)(33) Verify that toilet facilities are available. (4)(17)(33)
...	...

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COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
PESTICIDE WASTE DISPOSAL	
6-41. Disposal must be initiated for all excess pesticides (OEBGD, Chapter 11, Criteria 12 through 14; AR 420-76, para 4-2b and DOD 4160.21M para VI(B)(77)).	Determine that efforts have been made to transfer or exchange excess serviceable pesticides. (4)(16)(17)(33) Verify that reports have been made to: (4)(16)(17)(33) - MACOM PMC - USAEHA Pesticide Hotline. (NOTE: The best method for disposal of excess pesticides, if not restricted by a suspension or cancellation notice, is to use them in accordance with label directions.) Verify that pesticide wastes are tested to determine if they are hazardous wastes. (4)(16) Verify that if the pesticide waste is not a hazardous waste, it is disposed of in accordance with the label instructions through the Defense Reutilization and Marketing Office (DRMO), or in a specially designated landfill. (4)(16) Verify that paper work to turn in excess serviceable pesticides (that cannot be used) and unserviceable pesticides has been submitted to the installation DRMO. (2)(4)(16)(17)(33)
...	...
6-42. Excess spray and rinse water must be disposed of in a manner that does not constitute open dumping (AR 420-76, para 4-2d(1) and AR 40-5, para 10-5c).	Determine if the following specific procedures are in effect to limit excess finished spray: (4)(17)(33) - proper calculation - mixing only the amount of chemical required for each job. Verify that excess finished spray is not disposed of in the sanitary sewer and is either used in accordance with label directions, or disposed of as a pesticide related waste. (4)(17)(33) Verify that container and equipment rinse water is either saved for use as diluent in a subsequent spray operation, or disposed of as a pesticide related waste. (4)(17)(33)
...	...
6-43. Empty pesticide containers must be disposed of in a manner that does not constitute open dumping (AR 420-76, para 4-2d).	Verify that empty pesticide containers are: (4)(17)(33) - drained for 1 minute into the spray or mix tank - triple rinsed - rendered unusable (crushed and punctured) - disposed of in an approved landfill - recycled in accordance with label instructions or approved recycling plan.

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Appendix 6-1

Requirements for Installation Pest Management Program

Pest Control Recognized Requirements Work-Hours*	Minimum No. of Certified Full-time Pesticide Applicators Required	Installation Pest Management Plan	On-Site Program Review
Less than 0.25	None unless restricted use pesticides are used or unusually sensitive environmental conditions exist, including endangered species	Individual plan not required; included in supporting installation plan	Requirements established by MACOM PMC
0.25 to 0.49	One	Same as above	Same as above
0.50 to 1.49	One	Individual pest management plans required	Annual or biennial
1.50 to 3.99	Two	Same as above	Same as above
4.00 or More	50 percent of the pest management workforce	Same as above	Same as above

* Multiply the total productive work-years required for the pest management program by a factor of 1.19 to determine the recognized requirement. This factor includes essential time allowance for annual and sick leave, on-the-job training, formal training, mandatory attendance at lectures on safety, security, and fire prevention, and required medical examination.

Appendix 6-2

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.
Acrylonitrile	In combination with carbon tetrachloride. No registrations as the sole active ingredient.	*do	do	Other hazards-accident history of acrylonitrile and carbon tetrachloride products.
Aldicarb	As sole active ingredient.	Ornamental uses (indoor and outdoor).	do	Other hazards-accident history.
	No mixtures registered.	Agricultural crop uses.	Under further evaluation.	
Allyl alcohol	All formulations.	All uses.	Restricted	Acute dermal toxicity.
Aluminum phosphide	As sole active ingredient. No mixtures registered.	do	do	Inhalation hazard to humans.
Azinphos methyl	All liquids with a concentration greater than 13.5 pct.	do	do	do
	All other formulations.	do	Under further evaluation.	

*do means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Calcium cyanide	As sole active ingredient. No mixture registered.	do	Restricted	do
Carbofuran	All concrete suspensions and wettable powders 40% and greater.	do	do	Acute inhalation toxicity.
	All granular formulations.	Rice	Under evaluation.	
	All granular and fertilizer formulations.	All uses except rice.	do	
Chlorfenvinphos	All concentrate solutions or emulsifiable concentrates 21% and greater.	All uses (domestic and non-domestic).	Restricted	Acute dermal toxicity.
Chloropicrin	All formulations greater than 2%.	All uses	Restricted	Acute inhalation toxicity
	All formulations.	Rodent control	Restricted	Hazard to non-target organisms.
	All formulations 2% and less.	Outdoor uses (other than rodent control).	Unclassified	
Clonitralid	All wettable powders 70% and greater.	All uses	do	Acute inhalation toxicity.
	All granulars and wettable powders.	Molluscide uses.	do	Effects on aquatic organisms.
	Pressurized sprays 0.55% and less.	Hospital antiseptics.	Unclassified	

*do means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Cyclo-heximide	All formulations greater than 4%.	All uses.	Restricted	Acute dermal toxicity.
	All formulations 0.027% to 4%	All uses.	Under evaluation.	
	All formulations 0.027% and less.	Domestic uses.	Unclassified	
Demeton	1 pct fertilizer formulation, 1,985 pct granular.	All uses, including domestic uses.	Restricted	Domestic uses: Acute oral toxicity Acute dermal toxicity. Nondomestic outdoor uses. Residue effects on avian and mammalian species.
	All granular formulations, emulsifiable concentrates and concentrated solutions.	All uses.	do	Acute dermal toxicity. Residue effects on mammalian and avian species.
Dicrotophos	All liquid formulations 8% and greater.	All uses.	Restricted	Acute dermal toxicity; residue effects on avian species (except for tree injections).
Dioxathion	All concentrate solutions or emulsifiable concentrates[2] greater than 30%.	All uses	Restricted	Acute dermal toxicity.
	Concentrate solutions or emulsi-concentrates[2] 30% and less and wettable powders 25% and less.	Livestock and agricultural uses (nondomestic uses only).	Unclassified	
	All solutions[2] 3% and greater	Domestic	Restricted	do

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Dioxathion (Continued)	2.5% solutions[2] with toxaphene and malathion.	All uses.	Under evaluation.	
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.	do	Restricted	do Acute inhalation toxicity.
	Non-aqueous solution 95% and greater.	Commercial seed treatment.	Restricted	Acute dermal toxicity.
	Granular formulations 10% and greater.	Indoor uses (greenhouse).	do	Acute inhalation toxicity.
Endrin	All emulsions, dusts, wettable powders, pastes, and granular formulations 2 pct and above.	All uses.	Restricted.	Acute dermal toxicity. Hazard to nontarget organisms.
	All concentrations less than 2 pct.	do	do	Hazard to nontarget organisms.

*do means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
EPN	All liquid and dry formulations greater than 4%.	All uses.	Restricted	Acute dermal toxicity; acute inhalation toxicity; residue effects on avian species.
		Aquatic uses.	Restricted	Effects on aquatic organisms.
Ethoprop	Emulsifiable concentrates 40% and greater.	do	do	Acute dermal toxicity.
	All granular and fertilizer formulations.	do	Under evaluation.	
Ethyl parathion	All granular and dust formulations greater than 2 pct, fertilizer formulations, wettable powders, emulsifiable concentrates, concentrated suspensions, concentrated solutions.	do	Restricted	Inhalation hazard to humans. Acute dermal toxicity. Residue effects or mammalian, aquatic, avian species.
	Smoke fumigants.	do	do	Inhalation hazard to humans.
	Dust and granular formulations 2 pct and below.	do	do	Other hazards-accident history.
Fenamiphos	Emulsifiable concentrates 35% and greater.	do	do	Acute dermal toxicity.

*do means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Fensulfothion	Concentrate solutions 63% and greater, all emulsifiable concentrates and concentrate solutions 43% and greater with disulfoton 21% and greater, all emulsifiable concentrates 32% and greater in combination with disulfoton 32% and greater.	do	Restricted	do Acute inhalation toxicity.
	Granular formulations 10% and greater.	Indoor uses (greenhouse).	do	do
Fluoroacetamide/1081	As sole active ingredient in baits. No mixtures registered.	All uses.	Restricted	Acute oral toxicity.
Fonofos	Emulsifiable concentrates 44% and greater.	All uses.	do	Acute dermal toxicity.
	Emulsifiable concentrates 12.6% and less with pebulate 50.3% and less.	Tobacco	Unclassified	

*do means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Hydrocyanic acid	As sole active ingredient. No mixtures registered.	do	do	Inhalation hazard to humans.
Methamidophos	Liquid formulations 40% and greater.	All uses	Restricted	Acute dermal toxicity; residue effects on avian species.
	Dust formulations 2.5% and greater.	All uses	Restricted	Residue effects on avian 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	
Methomyl	As sole active ingredient in 1 pct to 2.5 baits (except 1 pct fly bait).	Nondomestic outdoor agricultural crops, ornamental and turf. All other registered uses.	Restricted.	Residue effects on mammalian species.
	All concentrated solution formulations.	do	do	Other hazards-accident history.
	90 pct wettable powder formulations (not in water soluble bags).	do	do	do
	90 pct wettable powder formulation in water soluble bags.	do	Unclassified	

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Methomyl (continued)	All granular formulations.	do	do	
	25 pct wettable powder formulations.	do	do	
	In 1.24 pct to 2.5 pct dusts as sole active ingredient and in mixtures with fungicides and chlorinated hydrocarbon, inorganic phosphate and biological insecticides.	do	do	
Methyl bromide	All formulations in containers greater than 1.5 lb	All uses.	Restricted	Other hazards-accident history.
	Containers with not more than 1.5 lb of methyl bromide with 0.25 pct 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 pct.	do	do	Other hazards-accident history. All foliar applications restricted based on residue

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Methyl parathion (continued)				effects on mammalian and avian species.
	Microencapsulated.	do	do	Residue effects on avian species.
	All dust and granular formulations 5 pct and greater and all wettable powders and liquids.			Hazard to bees. Acute dermal toxicity. Residue effects on mammalian and avian species.
Mevinphos	All emulsifiable concentrates and liquid concentrates.	do	do	do
	Psycodid filter fly liquid formulations.	do	do	Acute dermal toxicity.
	2 pct dusts.	do	do	Residue effects on mammalian and avian species.
Monocrotophos	Liquid formulations 19% and greater.	do	do	Residue effects on avian species. Residue effects on mammalian species.
	Liquid formulations 55% and greater.	do	do	Acute dermal toxicity. Residue effects on avian species. Residue effects on mammalian species.
Nicotine (alkaloid)	Liquid and dry formulations 14% and above.	Indoor (greenhouse)	Restricted	Acute inhalation toxicity.
	All formulations.	Applications to cranberries	Restricted	Effects on aquatic organisms.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Nicotine (alkaloid) (Continued)	Liquid and dry formulations 1.5% and less.	All uses (domestic and non-domestic).	Unclassified	
Paraquat (dichloride) and paraquat bis(methyl sulfate)	All formulations and concentrations except those listed below.	All uses.	Restricted	Other hazards. Use and accident history, human toxicological data.
	Pressurized spray formulations containing 0.4% pct Paraquat bis(methyl sulfate) and 15 pct petroleum distillates as active ingredients.	Spot weed and grass control.	do	
	Liquid fertilizers containing concentrations of 0.025 pct paraquat dichloride and 0.03 percent atrazine; 0.03 pct paraquat dichloride and 0.37 pct atrazine, 0.04 pct paraquat dichloride and 0.49 pct atrazine.	All uses.	Unclassified	
Phorate	Liquid formulations 65% and greater.	do	Restricted	Acute dermal toxicity. Residue effects on avian species (applies to foliar

*do means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Phorate (continued)				applications only). Residue effects on mammalian species (applies to foliar application only).
	All granular formulations.	Rice	Restricted	Effects on aquatic organisms.
Phosacetim	Baits 0.1% and greater.	All uses.	Restricted	Hazard to non-target species. Residues effects on mammalian species. Residue effects on avian species.
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.

*do means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Picloram	All formulations and concentrations except tordon 101R.	do	do	Hazard to nontarget organisms (specifically nontarget plants both crop and noncrop).
	Tordon 101 R forestry nerbicide containing 5.4 pct picloram and 20.9 pct 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.
Sodium fluoro-acetate	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 pct.	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 pct and below.	All uses except subsoil.	do	do
	do	All subsoil uses.	Unclassified	do

*do means same as above.

Active Ingredient	Formulation	Use Pattern	Classification[1]	Criteria Influencing Restriction
Sulfotepp	Sprays and smoke generators.	All uses.	Restricted	Inhalation hazard to humans.
Tepp	Emulsifiable concentrate formulations.	do	do	Inhalation hazard to humans. Dermal hazard to humans. Residue effects on mammalian and avian species.
Zinc Phosphide	All formulations 2% and less.	All domestic uses and nondomestic uses in and around buildings.	Unclassified	
	All dry formulations 60% and greater.	All uses.	Restricted	Acute inhalation toxicity.
	All bait formulations	Nondomestic outdoor uses (other than around buildings).	Restricted	Hazard to nontarget organisms.
	All dry formulations 10% and greater.	Domestic uses.	Restricted	Acute oral toxicity.

*do means same as above.

NOTES:

1 "Under evaluation" means no classification decision has been made and the use/formulation in question is still under active review within the USEPA.

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.

This table lists uses of pesticide products containing the active ingredients specified that have been classified for restricted use and are limited to use by or under the direct supervision of a certified applicator.

INSTALLATION:	COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Worldwide ECAS	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Health Physician/Preventive Medicine Officer (4) Safety and Health Officer (5) Golf Course Maintenance (15) Land Management Officer (DEH) (16) Building and Grounds Division (DEH) (17) Entomology Shop (DEH) (22) Staff Judge Advocate (33) Golf Course Pesticide Shop

Section 7

Petroleum, Oil, and Lubricant (POL) Management

SECTION 7

POL MANAGEMENT

A. Applicability of this Protocol

This protocol applies to military communities that store, transport, dispose of, or utilize petroleum, oil, and lubricant (POL). The protocol 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, ground water, 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 protocol covers management of storage tanks, organizational tanks, pipeline delivery systems, truck fill stands, immediate operating storage areas, and fueling/defueling flightline operations. POL materials addressed include jet fuel (JP-4, JP-7, JP-8), aviation gasoline (AVGAS), motor gasoline (MOGAS), diesel fuel, and lubricating oils. Waste petroleum based solvents (including PD-680) are addressed in Section 3, *Hazardous Waste Management.*

Some local requirements for POL may vary in important ways, and the evaluator should obtain copies of the spill plans, where appropriate, and review them for 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 local regulations.

B. DOD Regulations

- *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992, Chapter 9 outlines the criteria for the control and abatement of pollution from the storage, transfer, and distribution of petroleum products. Chapter 18 contains criteria for a spill plan and a contingency plan. Chapter 19 details requirements for POL underground storage tanks.

- Department of Defense (DOD) Directive 4140.25-M, *Procedures for the Management of Petroleum Products*, July 1988, describes procedures for the management of petroleum products on military communities.

- DOD Directive 5030.41, *Oil and Hazardous Substances Pollution Prevention and Contingency Plan*, 26 September 1978, addresses requirements for compliance with the National Oil and Hazardous Substances Pollution Contingency Plan.

C. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990 addresses spill planning, response and control. Para 5-7a requires Outside Continental United States (OCONUS) installations to comply with the substantive requirements of Federal regulations for Underground Storage Tanks (USTs). It also specifically heating oil tanks in the definition of USTs.

D. Responsibility for Compliance

- The Installation Commander (IC) is responsible for assigning the duty of drafting and reviewing the Spill Prevention and Response (SPR) Plan prior to its promulgation, and for conducting the annual review and update of the Installation Spill Control Plan (ISCP). Often, the IC delegates the specific preparation of the plan to the Directorate of Engineering and Housing (DEH) for implementation by the Environmental Coordinator (EC). The IC also is responsible for reviewing and implementing the plan for recoverable and waste petroleum.

- The Spill Response Team (SRT) responds to spills when requested by an On-Scene Commander (OSC) and to perform spill containment, recovery, cleanup, disposal, and restoration activities as directed by the OSC. The SRT is a multidisciplinary team that includes the following people: Facilities Engineer, EC, Director of Safety and Health, Fire Chief, Military Police, Public Affairs Officer, Safety Officer, and Staff Judge Advocate.

- The Fire Department provides support in emergency response, spill events, exercises, and fire protection activities. In addition, the department will be responsible for making periodic fire safety inspections of flammable/combustible storage and handling areas, hazardous waste storage areas, and accumulation points on the installation.

- The Safety Officer is responsible for conducting evaluations of work place safety and inspections of the handling and storage of hazardous materials and waste. The Safety Officer provides the appropriate manager with a report of the findings and recommended corrective actions. The Safety Officer is also responsible for ensuring the prompt and accurate investigation of any hazardous material mishaps that result in injury or property damage.

- The Fuels Management Officer of the DEH is responsible for the safe and efficient receipt, storage, handling, issuing, and accounting of all petroleum products to include all general operations and inspections.

- The DEH is responsible for the maintenance of all installed petroleum storage and dispensing systems. This responsibility often is discharged by the Liquid

Fuels Maintenance (LFM) shop. The DEH also is responsible for the calibration of permanently installed meters.

- The EC monitors all POL activities that may affect the environment and usually is responsible for coordinating the review and updating of the ISCP Plan. The EC also often coordinates the reportable spills notification of appropriate agencies on behalf of the Installation On-Scene Commander.

E. Key Compliance Definitions

These definitions were obtained from the directives/instructions and ARs listed at the end of each definition. If there is no citation listed for the definition, it has been drawn from the U.S. Code of Federal Regulations (CFR).

- *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.

- *Ancillary Equipment* - any devices including, but not limited to, pipings, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of regulated substances to or from the UST.

- *Associated Piping* - a length or system of piping connected to a UST and used to transport petroleum products or hazardous substances to or from the UST.

- *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.

- *Bulk Storage Tanks* - refers to field-erected tanks, usually having a capacity greater than 190,000 liters (L), or 50,000 gallons (gal), and constructed above or belowground (OEBGD, Chapter 9, Definitions).

- *Cathodic Protection* - a technique to prevent corrosion of a metal surface by making the 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.

- *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.

- *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.

- *Deferred USTs* - USTs that are exempt from meeting the outlined requirements except those concerning release response and corrective action for UST systems containing hazardous substances. These tanks include:
  1. wastewater treatment tank systems
  2. any UST system containing radioactive materials that are significant under the Atomic Energy Act of 1954
  3. any UST system that is a part of an emergency generator system at a nuclear power generation facility regulated by the Nuclear Regulatory Commission under 10 CFR Part 50, Appendix A
  4. airport hydrant fuel distribution systems
  5. UST systems with field-constructed tanks.

- *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).

- *Discharge* - includes, but is not limited to, the accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of a substance into or on any land or water (AR 200-1, Glossary).

- *Electrical Equipment* - underground equipment that contains dielectric fluid that is necessary for the operation of equipment such as transformers and buried electric cable.

- *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.

- *Excluded USTs* - USTs that are exempt form meeting the following outlined requirements. These tanks include:
  1. any UST system holding hazardous wastes listed under Subtitle C of the Solid Waste Disposal Act or a mixture of such hazardous wastes and other regulated substances
  2. any wastewater treatment tank system that is a part of a wastewater treatment facility regulated under Section 402 or 307(b) of the Clean Water Act
  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 100 gal or less
5. any UST 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.

- *Existing Tank System* - a tank system used to contain an accumulation of regulated substances, or for which installation began on or before 22 December 1988. Installation is considered to have commenced if:
  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. either a continuous on-site physical construction or installation program has begun or the owner or operator has entered into any contractual obligations that cannot be canceled or modified without substantial loss in order for physical construction at the site or installation of the tank system to be completed within a reasonable time.

- *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 to store material before introduction into the production process or to store finished products or by-products from the production.

- *Free-product* - a regulated substance that is present as a nonaqueous phase liquid (e.g., liquid not dissolved in water).

- *Hazardous Substance* - any substance having the potential to do serious harm to human health or the environment if spilled or released in reportable quantity. A listing of these substances and corresponding reportable quantity is contained in Appendix 3-1. The term does not include (OEBGD, Chapter 18, Definitions):
  1. petroleum, including crude POL or any fraction thereof, which is not otherwise specifically listed or designated as a hazardous substance above
  2. natural gas, natural gas liquids, liquified natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).

- *Hazardous Substance UST System* - any UST system that is not a petroleum UST system and that contains a hazardous substance defined in section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (but not including any substance regulated as a hazardous waste under subtitle C) or any mixture of such substances and petroleum.

- *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.

- *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.

- *Installation On-Scene Coordinator (IOSC)* - the official that coordinates and directs DOD control and cleanup efforts at the scene of a POL or hazardous substance spill due to DOD activities on or near the installation. This official is designated by the IC (OEBGD, Chapter 18, Definitions).

- *Installation Response Team (IRT)* - a group performing emergency functions as defined and directed by the IOSC (OEBGD, Chapter 18, Definitions).

- *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.

- *Maintenance* - the normal operational upkeep to prevent a UST system from releasing a product.

- *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.

- *New Tank System* - a tank system that will be used to contain an accumulation of regulated substances and for which installation commenced after 22 December 1988.

- *Noncommercial Purposes* - with respect to motor fuel, is not for resale.

- *Oil* - oil or petroleum products of any kind or any form, and oil mixed with wastes other than dredged spoil (AR 200-1, Glossary).

- *Oil* - in addition to the above definition, POL of any kind or in any form, including, but not limited to, petroleum, fuel POL, sludge, POL refuse, and POL mixed with wastes other than dredged spoil (OEBGD, Chapter 18, Definitions).

- *On the Premises Where Stored (Heating Oil)* - UST systems located on the same property where the stored heating oil is used.

- *Operator* - any person in control of, or having responsibility for, the daily operation of the UST system.

- *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.

- *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.

- *Pipe or Piping* - a hollow cylinder or tubular conduit that is constructed of non-earthen materials.

- *Pipeline Facilities* - includes new and existing pipes, pipeline rights of way, auxiliary equipment (e.g., valves, manifolds, etc.), and buildings or other facilities used in the transportation of POL (OEBGD, Chapter 9, Definitions).

- *POL* - includes, but is not limited to, petroleum and petroleum-based substances comprised of complex blends of hydrocarbons derived from crude oil through processes of separation, conversion, upgrading, and finishing, such as motor fuels, residual fuel oils, lubricants, petroleum solvents, and used oils (OEBGD, Chapter 19, Definitions).

- *POL Facility* - an installation with any individual above ground tank of 2500 L (660 gal) or greater, aggregate aboveground storage of 5000 L (1320 gal) or greater, UST storage of greater than 15,900 L (4200 gal), or a pipeline facility (OEBGD, Chapter 9, Definitions).

- *Regulated Substance* - 1) any substance defined in section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (but not including any substance regulated as a hazardous waste under subtitle C), and 2) petroleum, including crude oil or any fraction thereof, that is liquid at standard conditions of temperature and pressure (60 ^{o}F and 14.7 pounds per square inch absolute (psia)).

  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* - a discharge of one or more hazardous substances into the environment by any means. Minor releases within the workplace are excluded (AR 200-1, Glossary).

- *Release Detection* - determining if 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.

- *Repair* - to restore a tank or UST system component that has caused a release of product from the UST system.

- *Reportable Quantity (RQ)* - a released quantity of POL or quantities of hazardous substances that exceeds those identified in this chapter or in the RQ column, Appendix 3-1 (OEBGD, Chapter 18, Definitions).

- *Residential Tank* - a tank located on property used primarily for dwelling purposes.

- *Septic Tank* - a watertight 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 sent to a treatment facility.

- *Sheen* - an iridescent appearance on the surface of the water (AR 200-1, Glossary).

- *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 when needed in order to transport.

- *Surface Impoundment* - a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although may be lined with man-made materials) that is not an injection well.

- *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.

- *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.

- *Underground Release* - any belowground release.

- *Underground Storage Tank (UST)* - under the OEBGD, this is any tank, including underground piping connected thereto, larger than 420 L (110 gal) that is used to contain POL products or hazardous substances and the volume of which, including the volume of connected pipes, is 10 percent or more beneath the surface of the ground, but does not include:
    1. tanks containing heating oil used for consumptive use on the premises where it is stored
    2. septic tanks
    3. stormwater or wastewater collection systems
    4. flow through process tanks
    5. surface impoundments, pits, ponds, or lagoons
    6. field constructed tanks
    7. hydrant fueling systems.

- *Underground Storage Tank (UST)* - under AR 200-1, this is 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:
    1. farm or residential tank of 4180 L, or 1100 gal, or less capacity used for storing motor fuel for noncommercial purposes
    2. septic tanks
    3. pipeline facility, including gathering lines regulated by other acts
    4. surface impoundment, pit, pond, or lagoon
    5. stormwater or wastewater collection system
    6. flow-through process tank
    7. liquid trap or associated gathering lines directly related to oil or gas production and gathering operations
    8. storage tank situated in an underground area if the storage tank is situated upon or above the surface of the floor.

  (NOTE: The definition of UST does not include any pipes connected to any tank described in paragraphs (1) through (8) of this definition.)

  (NOTE: Although the United States Environmental Protection Agency (USEPA) excludes tanks used for storing heating oil for consumptive use on the premises where stored, the U.S. Army does not, AR 200-1.)

- *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.

- *Used Oil* - any oil or other waste POL product that has been refined from crude oil or is a synthetic oil that was used and as a result of such use, is contaminated by physical or chemical impurities (OEBGD, Chapter 6, Definitions).

- *Used Oil Burned for Energy Recovery* - used oil that is burned for energy recovery is termed "used fuel oil" (OEBGD, Chapter 6, Definitions).

- *UST System or Tank System* - UST, connected underground piping, underground ancillary equipment, and containment system, if any.

- *Wastewater Treatment Tank* - a tank designed to receive and treat influent wastewater through physical, chemical, or biological methods.

- *Waste Petroleum Product* - a product that is no longer suitable for any use because of excessive degradation or contamination by hazardous or toxic wastes.

POL MANAGEMENT

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All installations with fuels and lubricants	7-1 through 7-3	(1)(2)(3)(22)
POL storage/ management	7-4 through 7-26	(1)(2)(4)(5)(6)(9)(13)
Spills	7-27 through 7-30	(1)(2)
New UST systems	7-31 through 7-34	(1)(2)(4)(6)(9)
Tank filling	7-35 and 7-36	(1)(2)(6)(9)
Corrosion protection and repairs on USTs	7-37 through 7-39	(1)(2)(4)(6)(9)
Release detection and releases in USTs	7-40 through 7-48	(1)(2)(4)(5)(6)(9)

(a)CONTACT/LOCATION CODE:

(1) Directorate of Engineering and Housing (DEH)
(2) Environmental Coordinator (EC)
(3) Preventive Medicine Officer
(4) Safety and Health Officer
(5) Fire Department
(6) Director of Logistics
(9) Chief of Operations and Maintenance (O&M)
(13) Engineering, Plans, & Services (EP&S)
(22) Staff Judge Advocate

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
Deferred UST systems	7-49	(1)(2)(4)(6)(9)
Documentation	7-50 and 7-51	(1)(2)(4)(6)(9)
Metallic USTs	7-52	(1)(2)(4)
Installation after 8 May 1988	7-53	(1)(2)(4)(6)
Installation after 22 December 1988	7-54 through 7-56	(1)(2)(4)(6)(9)
Changes in service or closure	7-57 through 7-65	(1)(2)(4)(6)(9)
Used oil	7-66 through 7-68	(1)(2)

(a)CONTACT/LOCATION CODE:

(1) Directorate of Engineering and Housing (DEH)
(2) Environmental Coordinator (EC)
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(4) Safety and Health Officer
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POL MANAGEMENT

Records to Review

- Results of all UST testing, sampling, monitoring, inspection, maintenance, and repair work (for 1 year (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)
- UST inventory - map
- UST replacement program
- Groundwater well monitoring data

Physical Features to Inspect

- Airfield refueling operations
- Refueling facilities, including:
- Aboveground and belowground storage tanks and dikes
- Venting
- Fill pipes
- Gauges
- Stations
- Washrack areas
- Vehicle maintenance areas
- Oil separators
- Oil and hazardous substance site
- Rapid refueling points
- Fuel bladders

People to Interview

- Directorate of Engineering and Housing (DEH)
- Environmental Coordinator (EC)
- Preventive Medicine Officer
- Safety and Health Officer
- Fire Department
- Director of Logistics (DOL)
- Chief of Operations and Maintenance (O&M)
- Engineering, Plans, & Services (EP&S)
- Staff Judge Advocate

COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL INSTALLATIONS	
7-1. Determine actions or changes since previous review pol management (GMP).	Determine if noncompliance issues have been resolved by reviewing a copy of the previous review report. (1)(2)
...	...
7-2. Copies of all relevant DOD directive/ instructions, ARs, and guidance documents on POL management should be maintained at the installation (GMP).	Verify current copies of the following are maintained at the installation: (1)(2)(3)(22) - *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992. - DOD Directive 4140.25-M, *Procedures for the Management of Petroleum Products, July 1988.* - *DOD Directive 5030.41, Oil and Hazardous Substances Pollution Prevention and Contingency Plan*, 26 Sept 1978. - AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990. - AR 420-49, *Heating, Energy Selection and Fuel Storage, Distribution, and Dispensing Systems*, 22 June 1990. - TM 5-675, *Repairs and Utilities Solid Fuels Operations*, May 1958. - TM 5-678, *Repairs and Utilities Petroleum, Oils, and Lubricants (POL)*, October 1965.
...	...
7-3. Installations are required to comply with applicable Major Army Command (MACOM) regulations and substantive host nation regulations concerning POL management (AR 200-1, para 1-40).	Verify that the installation is complying with MACOM and substantive host nation requirements. (1)(2) (NOTE: Issues that are typically regulated by the MACOM and host nation agencies include: - certification requirements for laboratories analyzing samples - sludge disposal - spill response measures - aboveground and underground storage tank standards - certification requirements for employees.)
...	...

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer (4) Safety and Health Officer (5) Fire Department (6) Director of Logistics (9) Chief of Operations and Maintenance (O&M) (13) Engineering, Plans, & Services (EP&S) (22) Staff Judge Advocate

COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

POL STORAGE/ MANAGEMENT
 	
7-4. Army installations that store, transport, or dispense petroleum products are required to prepare, according to specific guidelines, a Spill Prevention, Control, and Countermeasure (SPCC) Plan and an ISCP (OEBGD, Chapter 9, Criteria 1, 2, and Chapter 18; DOD Directive 5030.41, para D; AR 200-1, para 8-4, and para 8-5a through 8-5c).
	Verify that the SPCC Plan and the ISCP have been prepared. (2)(6)
	
	Verify that the SPCC Plan includes: (2)
	
	- general information about the installation, including:
	  - name
	  - type of function
	  - location address
	  - charts of installation 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 quantity of oil that could be spilled as a result of major failure
	- inventory of all oil at storage, handling, and transfer facilities
	- detailed description of equipment and countermeasures
	- description of deficiencies at each listed site and corrective measures
	- written procedures for:
	  - operations to preclude spills of oil
	  - inspections
	  - recordkeeping requirements.
	
	Verify that the ISCP contains: (2)
	
	- command approval
	- responsibilities and training requirements for the IRT
	- description of immediate response actions
	- spill reporting procedures, including a list of persons who must receive notice of a spill (The IC and host nation authorities must be notified in the event of hazard to human health and the environment)
	- prespill planning for major potential spill areas, including surveillance procedures for early detection of spills
	- listing of spill containment and cleanup equipment/facilities
	- prioritized list of critical water resources to be protected
	- oil spill contingency plan
	- disposal procedures for contaminated soil or product

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer (4) Safety and Health Officer (5) Fire Department (6) Director of Logistics (9) Chief of Operations and Maintenance (O&M) (13) Engineering, Plans, & Services (EP&S) (22) Staff Judge Advocate

COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

7-4. (continued)	- training procedures for IRT
	- records of yearly spill response exercises
	- a public affairs section
	- plan review and update procedures
	- name, responsibilities, and duties of IOSC including the notification of appropriate DOD agencies and commands, and a follow-up written report when:
	  - the spill occurs inside a DOD installation and cannot be contained
	  - the spill exceeds 400 L (110 gal) of POL
	  - a water resource has been polluted
	  - the IOSC has determined the spill is significant.
	
	Verify that copies of the ISCP are available at every potential spill site. (2)
	
	(NOTE: Installations are not required to have an SPCC Plan if both of the following parameters are met:
	- the location of the activity or installation is such that there is not a potential to spill oil in a quantity that would be harmful to human health or welfare, or to the environment
	- one of the following criteria is met:
	  - aggregate aboveground oil storage on the installation is less than 5016 L, or 1320 gal
	  - no single aboveground oil storage tank on the installation is greater than 2508 L, or 660 gal
	  - total underground oil storage is less than 159,600 L, or 42,000 gal.)
	
	(NOTE: Separate SPCC Plans and ISCPs should be developed with copies of the ISCP provided at all potential spill sites, but the requirements for an SPCC Plan and ISCP for each installation or activity may be met with one plan containing two distinct sections.)

...	...
7-5. Each SPCC Plan and any amendments must be certified by a professional engineer that the plan and each amendment is prepared according to sound engineering practices (OEBGD, Chapter 9, Criteria 1; DOD Directive 5030.41, para E(1); AR 200-1, para 8-4c(1)).	Determine if the SPCC Plan has been certified. (2)
...	...

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer (4) Safety and Health Officer (5) Fire Department (6) Director of Logistics (9) Chief of Operations and Maintenance (O&M) (13) Engineering, Plans, & Services (EP&S) (22) Staff Judge Advocate

COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-6. The SPCC Plan must be amended whenever there is material change in facility design, construction, operations, or maintenance, that alters potential for an oil spill, or whenever the facility has: 1) discharged more than 3800 L, or 1000 gal into navigable waters in a single spill event or 2) discharged oil in harmful quantities in two reportable spill events within any 12-month (mo) period (AR 200-1, para 8-4c(3)).	Determine if the plan was subject to amendment for reasons of installation POL operation changes or spill incidents. (2)(6)(9) Verify that plan was amended and recertified by a professional engineer. (2)(6)(9) Verify that the SPCC Plan is tested annually (i.e., mock spillage event). (1)(2)(6)(9)
...	...
7-7. Each SPCC Plan must be reviewed at least once every 2 yr and updated at least every 5 yr (OEBGD, Chapter 9, Criteria 1; AR 200-1, para 8-4c(4)).	Verify that the SPCC Plan has been reviewed at least once every 2 yr. (2)(6) (NOTE: If the installation stores hazardous, waste the plan will be updated every year.)
...	...
7-8. The ISCP is required to be updated every 3 yr and approved by a professional engineer (AR 200-1, para 8-5d(1)).	Verify that the ISCP portion of any spill response document is updated every 3 yr. (2)(6) Verify that the ISCP has been approved by a professional engineer. (2)(6)
...	...
7-9. An IOSC and an IRT must be appointed by the IC (AR 200-1, para 8-4h(12)).	Verify that an IOSC and IRT have been appointed. (2)(6) Verify that they are trained and knowledgeable of the contingency plan. (2)(6)
...	...
7-10. Installations should have a plan for the management of reclaimed, recoverable, and waste liquid petroleum products (GMP).	Verify that a Management of Recoverable and Waste Liquid Petroleum Products Plan has been prepared and adopted. (2)(6)
...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-11. All installation personnel involved with the management and handling of oil and hazardous substances must take part in periodic training in spill prevention and response (OEBGD, Chapter 18, Criteria 6; AR 200-1, para 8-5d(12)).	Verify that training is conducted: (1)(2)(9)(13) - once per year for all personnel working at oil and hazardous substance sites - within 6 mo for all supervisory personnel - before starting work for unsupervised positions - after a spill response in which training deficiencies were noted.
...	...
7-12. Facilities and equipment for storing, handling, or using oils are required to be designed to prevent or minimize spills to the environment and are required to be periodically tested and inspected (AR 200-1, para 8-2c).	Verify that at onshore facilities, one of the following preventive systems, or an equivalent, is used: (1)(2)(5)(9) - absorbent material - sand bags/temporary curbing devices - dikes, berms, or retaining walls sufficiently impervious to contain spilled oil - culverting gutters or other drainage system - weirs, booms, or other barriers - spill diversion ponds - retention ponds. Verify that at offshore facilities, one of the following, or any equivalent, is available: (1)(2)(5)(9) - curbing, and drip pans - sumps and collection systems. Examine each oil storage area for the following: (2)(5)(6) - adequacy of material types and quantities - accessibility of storage location - condition of equipment.
...	...
7-13. Drainage of rain water from diked areas should be controlled by a valve that is closed when not in active use (OEBGD, Chapter 9, Criteria 2(c)).	Verify that valves are closed and locked at each diked area when not in use. (1)(2) Determine if drainage valves are attended when open. (1)(2) Verify that water drained from diked areas does not cause a harmful discharge. (1)(2) Verify that personnel draining the diked area know how to identify a discharge. (1)(2) Determine, by inspecting records, if any drainage water was tested to identify if it would represent a harmful discharge. (1)(2)
...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-14. Drainage water that is determined to contain petroleum products in harmful quantities should be treated before discharge (OEBGD, Chapter 90, Criteria 2(c)).	Verify that prior to draining stormwater from diked areas, they are inspected for petroleum sheen. (9)(13) Verify that any sheen is collected with absorbent material prior to drainage or treated using an oil-water separator. (9)(13) Verify that the absorbent material is disposed of according to any hazardous characteristics it exhibits. (9)(13)
...	...
7-15. All bulk storage tanks (field erected tanks, usually with a capacity greater than 190,000 L, or 50,000 gal, or greater capacity) must be provided with a secondary means of containment for the entire contents plus sufficient free board to allow for precipitation and expansion of product (OEBGD, Chapter 9, Criteria 2(a)).	Verify that adequate containment is provided for bulk storage tanks. (1)(2) Verify that diked areas are impervious enough to contain spilled oil. (1)(2)
...	...
7-16. A product recovery system should be installed at the tank water drain-off valve for tanks storing aviation fuels (GMP).	Verify that product recovery systems are in place and operating correctly at aviation fuel tanks. (9)(13)
...	...
7-17. Maximum permeability for diked areas must be 10^7 centimeters/second (cm/s) (OEBGD, Chapter 9, Criteria 2(b)).	Verify that the permeability of diked areas does not exceed 10^7 cm/s. (9)(13)
...	...
7-18. The DEH Utilities Maintenance and Operations and DOL Fuel Maintenance should have a Memorandum of Agreement pertaining to draining floating roof tanks and interior dike basins (GMP).	Determine if a Memorandum of Agreement has been prepared and signed or coordinated through the DEH Director and the EC. (1)(2)(9)

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-19. Wastewater and fuel sludges resulting from periodic tank cleaning are required to be tested for hazardous characteristics (OEBGD, Chapter 9, Criteria 3).	Verify that tank cleaning wastes are tested for hazardous characteristics. (1)(2)(9)(13) Verify that tank bottom waters that are periodically drained from bulk storage tanks are collected and tested for hazardous characteristics. (1)(2)(9)(13) (NOTE: Wastes that test positive for hazardous characteristics must be handled as hazardous waste.)
...	...
7-20. Installation Fuels Management should have a quality control and inspection program (GMP).	Verify that internal quality inspections are done as follows: (9)(13) - at least five spot check inspections are being conducted per week - unsatisfactory areas are reinspected after 30 days, but before 45 days, unless otherwise directed. Verify that quality control and inspection personnel are conducting external inspections annually. (9)
...	...
7-21. Aboveground storage tanks should undergo periodic integrity testing (GMP).	Verify that periodic leak tests have been conducted, and check the results (a decrease in converted fuel volume equal to or greater than 1/4 inch (in.) constitutes a suspected leak). (1)(2)(9) Verify, by interviewing, that the DEH Director, EC, and Safety and Health Officer have been notified of all confirmed leaks. (1)(2)(4) Verify that leaking tanks have been repaired or replaced. (1)(2)
...	...
7-22. Periodic inspection of MOGAS, diesel, kerosene, and aviation fuel test cell storage tanks should be done (GMP).	Verify that inspections have been conducted as required by checking records and interviewing staff. (2) Verify that leaking or deteriorated tanks have been repaired or replaced. (1)(2) Verify that leaks were reported to the DEH Director, EC, and Safety and Health Officer. (1)(2)(4)
...	...
7-23. Buried fuel piping should have a protective wrapping and coating and should be cathodically protected if soil conditions warrant (GMP).	Verify, through interviews and records reviews, that buried fuel piping is properly protected from corrosion. (2)(5)(6)(9) Verify that the voltage is greater than -0.85 volts (v), but not more than -3.0 v (monthly), for impressed current systems. (2)(6)(9) Verify that the voltage is greater than -0.85 v, but not more than -3.0 v (biannually), for sacrificial anode systems. (2)(6) Verify that leak detection and failure are reported. (2)(6)

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-24. All pipeline facilities with a construction start date after 1 October 1994 must be designed and constructed to meet recognized U.S. industry standards (OEBGD, Chapter 9, Criteria 5).	Determine if the installation will be constructing any new pipeline facilities. (1)(2)
...	...
7-25. All pipeline facilities carrying POL are required to be tested and maintained in accordance with recognized U.S. industry standards (OEBGD, Chapter 9, Criteria 4).	Verify that each pipeline operator handling POL prepares and follows a procedural manual for operations, maintenance, and emergencies. (2) Verify that each new pipeline system and each system in which pipe has been replaced or relocated is hydrostatically tested, in accordance with recognized U.S. industry standards, without leakage (6)
...	...
7-26. Army operated off-installation pipelines should be inspected regularly (GMP).	Verify that records to confirm inspections are maintained. (1)(2) Verify that detected leaks and failures have been reported and leaking pipes repaired or replaced. (6)
...	...
SPILLS	
7-27.. Any spill of POL that exceeds the reportable quantities must be reported to the IOSC, host nation authorities, and local fire departments immediately, and action must be implemented to eliminate the source and contain the spill (OEBGD, Chapter 18, Criteria 5(b) and 5(e); AR 200-1, para 8-3(a)).	Verify that spills of reportable quantities of POL have been reported to the IOSC and other appropriate individuals (See Appendix 3-1 in the Section, *Hazardous Wastes Management*, for reportable quantities). (1)(2) (NOTE: Discharges of oil from a properly functioning vessel engine are not considered harmful.)
...	...
7-28. Installations are not allowed to add dispersants or emulsifiers to oil to be discharged (DOD Directive 5030.41, para D(5)).	Verify that facilities do not add dispersants or emulsifiers to discharges. (1)(2)
...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-29. Specific steps and actions are required to be taken in incidents of a spill or a release (OEBGD, Chapter 9, Criteria 6).	Verify that when there is a spill, the immediate response involves: (1)(2) - stopping the leak - controlling the spill - calling for help. Verify that followup includes: (1)(2) - preventing the migration of released POL - continuing the monitoring and mitigation of any fire and safety hazards posed by vapors or free product - determining soil and water cleanup action - beginning free product remo val as soon as possible.
...	...
7-30. When a spill of POL occurs inside the installation and is migrating off the installation or threatening the local host nation drinking water resource, the appropriate authorities must be notified immediately (OEBGD, Chapter 18, Criteria 5(d)).	Determine if any spills of POL have migrated off the installation. (1)(2) Verify that appropriate Military Department, Executive Agent, host nation authorities were notified. (1)(2)
...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
NEW UST SYSTEMS	(NOTE: AR 200-1, para 5-7 includes USTs used for storing heating oil for consumptive use on the premises in its definition of an underground storage tank.)
7-31. Installations are required to maintain a UST inventory (OEBGD, Chapter 19, Criteria 1).	Verify that the installation has an inventory of USTs, including hazardous substance USTs. (1)(2)(6)(9)
...	...
7-32. New or upgraded USTs are required to be fitted with spill and overfill prevention equipment (OEBGD, Chapter 19, Criteria 2(b); AR 200-1, para 5-7a).	Verify that spill prevention equipment will prevent a release of product to the environment when the transfer hose is detached from the fill pipe. (1)(2)(6)(9) Verify that overfill prevention equipment does one of the following: (1)(2)(6) - automatically shuts off flow into the tank when the tank is no more than 90 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 - restricts flow 30 minutes (min) prior to overfilling, alerts the operator with a high-level alarm 1 min before overfilling, or automatically shuts 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 95 L, or 25 gal at one time.) (NOTE: Under the OEBGD, a spill containment box must be installed around the fill pipe where spill and overfill protection are required.) (NOTE: These standards are based on 40 CFR 280.20(c) and 280.21(d), which have been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...
7-33. All organizational fuel tanks should be inspected annually (GMP).	Verify the following through a review of inspection forms: (1)(4)(6)(9) - certified tank calibration charts to measure fuel volumes are present on all tanks of 2512 L, or 661 gal and over - condition of tanks, piping, and dikes is noted - verify that any confirmed leaking tanks were repaired or replaced.
...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-34. Installations are required to use UST systems made of or lined with materials compatible with the substance stored (AR 200-1, para 5-7a).	Verify that the substances stored in UST systems are compatible with the system. (1)(2)(4)(6) Identify and check all USTs being used to store a substance other than that for which it was originally intended. (1)(4)(6)(9) (NOTE: These standards are based on 40 CFR 280.32, which has been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...
TANK FILLING	
7-35. The filling of a UST must include the prevention of overfilling and spilling of the substance (AR 200-1, para 5-7a).	Observe, if possible, the filling operations; otherwise, review records for reports of overfills or spills resulting from operations. Check grounds around fill lines for visible or odorous indications of contamination. (1)(2)(6)(9) Verify that the level of the UST is checked before a transfer is made. (2)(6)(9) Verify that fill lines are capped and locked. (2)(6)(9) (NOTE: These standards are based on 40 CFR 280.30(a), which has been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...
7-36. Installations with UST systems are required to contain and immediately clean up a spill or overfill and report it within 24 hours (h) in specific situations (AR 200-1, para 5-7a).	Verify that the installation has reported, contained, and cleaned up any and all spills or overfills that met the following criteria: (1)(2)(6)(9) - spills or overfills of petroleum that resulted in a release to the environment of more than 95 L, or 25 gal, or that caused a sheen on nearby surface water - spills or overfills of hazardous substances that resulted in a release to the environment in excess of the RQ (see the *Hazardous Materials Management* Appendices). Verify that the installation has contained and immediately cleaned up a spill or overfill of petroleum that is less than 95 L, or 25 gal. (1)(2)(6)(9) (NOTE: These standards are based on 40 CFR 280.53, which has been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
CORROSION PROTECTION AND REPAIRS ON USTs **7-37.** UST systems with corrosion protection must meet specific requirements (AR 200-1, para 5-7a). ...	Determine which UST systems at the installation have corrosion protection. (1)(2)(6)(9) Verify that the corrosion protection system operates continuously to provide corrosion protection to the metal components that routinely contain regulated substances and are in contact with the ground. (1)(2)(6)(9) Verify that all cathodic protection systems are tested within 6 mo after installation and every 3 yr thereafter. (1)(2)(6)(9) Verify that UST systems with impressed current cathodic protection are inspected every 60 days. (1)(2)(6)(9) 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. (1)(2)(6)(9) (NOTE: These standards are based on 40 CFR 280.31, which has been implemented at OCONUS installations by AR 200-1, para 5-7a.) ...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-38. Repairs to USTs must be performed according to industry code (AR 200-1, para 5-7a).	Determine who does repairs to USTs. (1)(2)(9) Verify that the following procedures are used to repair USTs: (1)(2)(9) - fiberglass reinforced tanks are repaired by the manufacturer's authorized representative or according to industry standards - metal pipe fittings and sections that have leaked because of corrosion are replaced, whereas fiberglass may be repaired according to manufacturers specifications. Verify that tanks and piping that have been replaced or repaired are tested for tightness within 30 days. (1)(2)(9) (NOTE: Tanks and piping need not be tested if: - repairs are internally inspected - 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: (1)(2)(4)(9) - 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. (1)(2)(4)(9) (NOTE: These standards are based on 40 CFR 280.33, 280.43, and 280.44, which have been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...
7-39. New tanks and piping installed after 1 October 1994 must have corrosion protection unless they are constructed of fiberglass or other non-corrodible materials (OEBGD, Chapter 19-2, Criteria 2(a)).	Determine if there are plans to install any USTs after 1 October 1994. (1)(2)(4)(9) Verify that installation plans include corrosion protection if necessary. (1)(2)(4)(9) Verify that the corrosion protection system is certified by a competent authority. (1)(2)(4)(9)
...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
RELEASE DETECTION AND RELEASES IN USTs **7-40.** Installations with new and existing underground storage tanks are required to provide a method, or combination of methods of release detection (OEBGD, Chapter 19, Criteria 3; AR 200-1, para 5-7a). ...	Verify that the installed release detection system can detect a release from any portion of the tank and the connected underground piping. (2)(4)(9) Verify that the installation has a program in place (or at least in the proposed stage) for provisions of release detection. (1)(2)(4)(9) (NOTE: See Appendix 7-1 for phase-in schedule.) Verify that the appropriate schedule is being complied with. (1)(2) (NOTE: Any pressurized delivery lines must be retrofitted by 22 December 1990.) (NOTE: These standards are based on 40 CFR 280.10(d) and 280.40, which have been implemented at OCONUS installations by AR 200-1, para 5-7a.) (NOTE: Release detection requirements in 40 CFR 280.40 through 280.45 do not apply to USTs that store fuel solely for use by emergency power generators.) ...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

7-41. UST systems containing petroleum must meet specific release detection system requirements (AR 200-1, para 5-7a).	Verify that tanks are monitored every 30 days using the method in Appendix 7-2, except for: (1)(2)(4)(6)(9)
	
	- UST systems that 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 that 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 (under OEBGD, Chapter 19, Criteria 3(a) the date is 1 October 2004)
	- tanks that hold less than 2090 L, or 550 gal, may use weekly tank gauging.
	
	(NOTE: Requirements for upgrading or closing tanks should be met by the earlier deadline, i.e., 22 December 1998.)
	
	Verify that underground piping that routinely contains a regulated substance has the following release detection done according to the methods in Appendix 7-2: (1)(6)(9)
	
	- for pressurized piping:
	  - equipped with automatic line leak detector
	  - annual tightness testing or monthly monitoring.
	- for suction piping:
	  - line tightness testing every 3 yr or monthly monitoring
	  - no release detection system needed for suction piping that is below grade and:
	  - operates at less then 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.
	
	(NOTE: These standards are based on 40 CFR 280.41, 280.43, and 280.44, which have been implemented at OCONUS installations by AR 200-1, para 5-7a.)

...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-42. Under the OEBGD, leak detection systems must meet specific operating requirements (OEBGD, Chapter 19, Criteria 2(c)).	Verify that leak detection systems are capable of detecting a 0.75 L (0.2 gal) per hour leak rate or a release of 460 L (150 gal) (or 1 percent tank volume, whichever is greater) within 30 days with a probability of detection of 0.95 and a probability of false alarm of not more than 0.05. (1)(6)(9) Verify that USTs installed after 1 October 1994 use one of the following leak detection methods: (1)(6)(9) - automatic tank gauging - vapor monitoring - groundwater monitoring - interstitial monitoring. Verify that new pressurized piping is equipped with automatic line leak devices and uses either an annual tightness test or monthly monitoring. (1)(6)(9) Verify that suction piping has either a line tightness test conducted every 3 yr or uses monthly monitoring. (1)(6)(9)
...	...
7-43. Installations with a confirmed release from a petroleum or hazardous substance UST, except for excluded USTs (see the definitions) and USTs exempted under the Resource Conservation and Recovery Act (RCRA) Subtitle C, Sec. 3004(u) corrective action requirements, are required to perform specific initial response actions within 24 hr of a release (AR 200-1, para 5-7a).	Verify that installation personnel are aware of the following initial response actions: (1)(2)(4)(6)(9) - 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 standards are based on 40 CFR 280.60 and 280.61, which have been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-44. Installations with a confirmed release from a petroleum or hazardous substance UST, except for excluded USTs (see the definitions) and USTs exempted under the RCRA C Sec. 3004(u) corrective action requirements, are required to perform specific initial abatement measures and site checks unless directed to do otherwise by the governing agency (AR 200-1, para 5-7a).	Verify that the following actions are performed: (1)(2)(5)(6)(9) - as much of the substance as is possible is removed from the UST system - a 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 - measurements are done for the presence of a release where the contamination is most likely to be present - an investigation 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 and site checks and the resulting information and data collected. (1)(2) (NOTE: These standards are based on 40 CFR 280.60 and 280.62, which have been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...
7-45. Installations with a confirmed release from petroleum or hazardous substance UST, except for excluded USTs (see the definitions) and USTs exempted under the RCRA C Sec. 3004(u) corrective action requirements, are required to assemble information about the site and nature of the release (AR 200-1, para 5-7a).	Verify that the following information is collected: (1)(2) - 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, climatic conditions, and land use - results of site check - results of free product investigation. (NOTE: These standards are based on 40 CFR 280.60 and 280.63, which have been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-46. Installations with a confirmed release from a petroleum or hazardous substance UST, except for excluded USTs (see the definitions) and USTs exempted under the RCRA C Sec. 3004(u) corrective action requirements must, to the maximum extent possible, remove the free product where site investigations have indicated free product (AR 200-1, para 5-7a). ...	Determine if there are release sites where the existence of free product has been confirmed. (1)(2)(6)(9) Verify that free product removal is done so that the spread of contamination is minimized. (1)(2)(4)(6) (NOTE: These standards are based on 40 CFR 280.60 and 280.64, which have been implemented at OCONUS installations by AR 200-1, para 5-7a.) ...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-47. Installations with a confirmed release from a petroleum or hazardous substance UST, except for excluded USTs (see the definitions) and USTs exempted under the RCRA C Sec. 3004(u) corrective action requirements, are required to perform an investigation for soil and groundwater contamination (OEBGD, Chapter 19, Criteria 3(b); AR 200-1, para 5-7a).	Verify that an investigation of the release, the release site, and possibly affected surrounding areas has been done and the investigation has determined if any of the following conditions exists: (1)(2)(6)(9) - evidence that ground water wells have been affected - free product is present - evidence that contaminated soil is in contact with groundwater. (NOTE: These standards are based on 40 CFR 280.60 and 280.65, which have been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...
7-48. Existing leaking USTs are required to be immediately removed from service (OEBGD, Chapter 19, Criteria 3(b)).	Determine if there are any known leaking USTs on the installation. (1)(2)(6)(9) Verify that there are plans to remove them from service. (1)(2)(6)(9)
...	...
DEFERRED UST SYSTEMS	
7-49. Deferred UST systems (see definition) are required to meet specific standards (AR 200-1, para 5-7a).	Verify that deferred UST systems (whether single or double walled) are not installed to store regulated substances unless: (1)(2)(4)(6)(9) - releases due to corrosion or structural failure will be prevented for the operational life of the system - it is cathodically protected against corrosion, constructed of non-corrodible materials, steel clad with a noncorrodible material, or designed to prevent release - it is constructed or lined with material that is compatible with the stored substance. Verify that deferred systems meet the standards concerning release response and action for USTs containing petroleum. (1)(2) (NOTE: These standards are based on 40 CFR 280.10(c) and 280.11, which have been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
DOCUMENTATION	
7-50. Installations with USTs are required to meet specific reporting requirements (AR 200-1, para 5-7a).	Verify that the installation has submitted the following when applicable: (1)(2) - notifications of new USTs - release reports - planned or complete corrective actions - notice of closure or change-in-service. (NOTE: These standards are based on 40 CFR 280.34(a), which has been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...
7-51. Installations with USTs are required to meet specific recordkeeping requirements (AR 200-1, para 5-7a).	Verify that records are kept of the following: (1)(2)(4)(6)(9) - 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 - recent compliance with release detection requirements - results of any sampling, testing, or monitoring of release detection systems for at least 1 yr - written documentation of all calibration, maintenance, and repair of release detection equipment for at least 1 yr - results of excavation zone assessments for 3 yr after permanent closure - results of any site investigations. Verify that records are available at one of the following: (1)(2)(6)(9) - the UST site with records immediately available for inspection - a readily available alternative site with records provided for inspection. (NOTE: These standards are based on 40 CFR 280.34(b) and 280.34(c), 280.45, and 280.74, which have been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...
METALLIC USTs	
7-52. Underground metallic storage tanks should be protected from corrosion by coatings, cathodic protection, or other effective methods (GMP).	Verify that new USTs are appropriately protected from corrosion. (1)(2) Determine if the voltage is greater than -0.85V, but not more than -3.0V (monthly), for impressed current systems. (1)(2)(4) Determine if the voltage is greater than -0.85V, but not more than -3.0V (biannually), for sacrificial anode systems. (1)(2)(4) Verify that leak detection and leak detection failure is reported. (1)(2)
...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

INSTALLATION AFTER 8 MAY 1986
 	
7-53. Notice must be given within 30 days when a UST system is brought into service after 8 May 1986 (AR 200-1, para 5-7a).
 	
...
 	
INSTALLATION AFTER 22 DECEMBER 1988
 	
7-54. UST systems installed after 22 December 1988 must be constructed in such a manner that they will remain structurally sound for their operating life (AR 200-1, para 5-7a).
 	
...
	Determine which tanks were installed after 8 May 1986. (1)(2)(4)(6)
	
	(NOTE: These standards are based on 40 CFR 280.22, which has been implemented at OCONUS installations by AR 200-1, para 5-7a.)
	
	...
	
	Verify that USTs have the following: (2)(6)(9)
	
	- leak/spill prevention protection
	- the tank is constructed of one of the following materials:
	  - fiberglass-reinforced plastic
	  - steel that has one of the following types of cathodic protection:
	  - coated with a suitable dielectric material
	  - field installed cathodic protection (expert installed)
	  - impressed current systems that allow determination of current operating status
	  - steel, fiberglass, or 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, or reinforced plastic composite.)
	
	(NOTE: These standards are based on 40 CFR 280.20(a) and 280.20(b), which have been implemented at OCONUS installations by AR 200-1, para 5-7a.)
	
	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
7-55. Installation of a UST must be done by a certified installer and according to standard practices (AR 200-1, para 5-7a).	Verify, by checking records for certification, that any new UST systems have been properly installed. (1)(2) Review procedures for installation of new or pending USTs and determine if the procedures for the installation of new or pending USTs meet industry standards. (1)(2) Verify that the installer was certified by manufacturer or implementing agencies. (1)(2) (NOTE: These standards are based on 40 CFR 280.20(d) and 280.20(e), which have been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...
7-56. New UST systems must be tested for tank tightness (AR 200-1, para 5-7a).	Review status of USTs on installation. (1)(2)(4)(6) Verify that tank tightness testing has been or will be conducted according to the following: (1)(6)(9) - inventory control is conducted monthly - new UST systems are tested for tank tightness every 5 yr (NOTE: The above is allowed for 10 yr after installation or upgrade.) - monthly release detection is required after 10 yr. Check records for plans that outline testing dates and procedures. (1)(6) (NOTE: These standards are based on 40 CFR 280.20, which has been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
CHANGES IN SERVICE OR CLOSURE	
7-57. USTs put out of service temporarily must have continued maintenance (AR 200-1, para 5-7a).	Inspect out of service USTs to ensure proper maintenance is being performed for the following: (2)(4)(9) - corrosion protection - release detection. Determine how long the UST has been out-of-service. If it has been near or over 1 yr, discuss if plans have been made for permanent closure. (1)(6)(9) (NOTE: If the UST is empty, release detection is not required.) (NOTE: An empty UST is one that 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 that the vent lines are open and functioning and all other lines, pumps, mainways, and ancillary equipment is capped and secured. (2)(9) (NOTE: These standards are based on 40 CFR 280.70, which has been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...
7-58. 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 (AR 200-1, para 5-7a).	Review plans for changes in UST service. Determine if notification of such changes were given within 30 days. (1)(2) (NOTE: These standards are based on 40 CFR 280.71(a), which has been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...
7-59. USTs permanently taken out of service and abandoned USTs are required to be removed from the ground (AR 200-1, para 5-7c(4)).	Review USTs that are closed, or in the process of being closed, and identify if proper closure procedure is being followed. (1)(6)(9) Verify that tanks are emptied and cleaned by re ving all liquids and accumulated sludges. (1)(6)(9) Check for possible abandoned USTs and if there are plans to remove the tanks. (1)(6)(9) Review records after closure of UST. Determine if a site assessment was made to ensure that no releases to the environment have occurred. (1)(6)(9)
...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-60. If a UST has not been used for one year, all of the product and sludges must be removed and the tank either cleaned and filled with an inert substance or removed (OEBGD, Chapter 19, Criteria 3(c)).	Determine if there are USTs at the installation that have not been used for 1 yr or more. (1)(6)(9) Verify that they were either cleaned and filled with an inert substance or removed. (1)(6)(9)
...	...
7-61. Prior to a change-in-service, tanks must be emptied and cleaned and a site assessment conducted (AR 200-1, para 5-7a).	Identify any tanks that the installation has continued to use to store a nonregulated substance (a change-in-service). (2)(6)(9) Verify that prior to the change, the tank was emptied and cleaned. (1)(6)(9) Verify that prior to the change, a site assessment was done. (1)(6)(9) (NOTE: These standards are based on 40 CFR 280.71(c), which has been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...
7-62. Before permanent closure or change-in-service is completed, measurements must be made for the presence of a release where contamination is most likely to be present at the site (AR 200-1, para 5-7a).	Verify that measurements for the presence of a release have been done. (1)(2) (NOTE: These standards are based on 40 CFR 280.72, which has been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...
7-63. Installations with UST systems closed prior to 22 December 1998 must 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 or the environment (AR 200-1, para 5-7a).	Identify any USTs that were closed prior to 22 December 1998. (1)(2)(9) Verify that the excavation zone of these USTs has been assessed and cleanup done as needed. (1)(2) (NOTE: These standards are based on 40 CFR 280.73, which has been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
7-64. Excavation zone assessment records shall be maintained for 3 yr (AR 200-1, para 5-7a).	Verify that excavation zone assessment records are maintained for 3 yr in one of the following ways: (1)(2) - by the installation - at the implementing agency if they cannot be maintained at the closed installation. (NOTE: These standards are based on 40 CFR 280.74, which has been implemented at OCONUS installations by AR 200-1, para 5-7a.)
...	...

7-65. Substandard systems must be upgraded, closed, or removed from service by 22 December 1998 (AR 200-1, para 5-7a).	Review plans for upgrades or decommissioning of a substandard UST. (1)(2)
	
	Verify that upgrading of steel USTs includes one of the following methods: (1)(2)
	- 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. Verify that 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
	  - tank has been installed for less than 10 yr and is monitored monthly for releases
	  - tank has been installed for less than 10 yr and is assessed for corrosion holes by conducting two tightness tests, one before and one 3-6 mo after installation
	  - tank is assessed for corrosion holes by a method that is determined by the implementing agency to be equally protective
	- lining combined with cathodic protection:
	  - if lining is installed according to requirements
	  - if cathodic protection system meets requirements.
	
	Verify that spill and overfill equipment is added that meets the same standards as new USTs. (1)(2)
	
	Verify that piping that routinely contains regulated substances and is in contact with the ground is cathodically protected. (1)(2)
	
	(NOTE: If a release detection system is not available for the UST, it must be phased out in 1-5 yr.)
	
	(NOTE: These standards are based on 40 CFR 280.21(a) through 280.21(c), which have been implemented at OCONUS installations by AR 200-1, para 5-7a.)

...	...

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COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
USED OIL	

7-66. Installations that burn used oil can only do so in specific devices (OEBGD, Chapter 6, Section 9).	Verify that used oil fuel is only burned in the following devices: (1)(2)
	- industrial furnaces
	- industrial boilers located on the site of a facility engaged in a manufacturing process where substances are transformed into other products, including the component parts of products, by mechanical or chemical processes
	- utility boilers used to produce electric power, steam, or heated or cooled air, or other gases or fluids
	- used oil space heaters if:
	  - the heat burns only used oil that the installation generates
	  - the heater is designed to have a maximum capacity of not more than 0.5 Million British thermal units (MBtu)/h
	  - the combustion gases from the heater are properly vented to the ambient air.

...	...
7-67. Installations that generate used oil and market it directly to a burner should meet specific standards (GMP).	Verify that the installation prepares and sends the receiving facility an invoice detailing the following for off-specification used oil: (1)(2) - an invoice number - the names and addresses of the shipping and receiving facilities - the quantity of off-specification oil to be delivered - the dates of shipment or delivery. Verify that copies of the invoices are kept for 3 yr. (1)(2) Verify that for used oil that is not off-specification, copies of the waste analyses are kept for 3 yr. (1)(2) Verify that the installation has a signed notice from the burner that the oil will only be burned in approved furnaces and/or boilers. (1)(2)
...	...
7-68. Used oil or used oil contaminated with any hazardous waste must not be used for dust suppression or road treatment (OEBGD, Chapter 6, Section 9, Criteria 2).	Verify that the installation does not use used oil for dust suppression or road treatment. (1)(2)

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Appendix 7-1

Schedule for Phase-in of Release Detection

Year system was installed	Year when release detection is required (by December 22 of the year indicated)				
	1989	1990	1991	1992	1993
Before 1965 or date unknown.	RD	P			
1965-69		P/RD			
1970-74		P	RD		
1975-79		P		RD	
1980-88		P			RD

P = must begin release detection for all pressurized piping as defined in 280.41(b)(1).
RD = must begin release detection for tanks and suction piping.

(NOTE: Under the OEBGD, existing POL USTs and piping are must be upgraded or replaced to meet new standards by 1 October 2004.)

Appendix 7-2

Options for Release Detection

The most immediate and demanding requirements of 40 CFR 280 are the release detection methods that must be implemented or installed in all UST systems. (See Appendix 7-1 for phase-in schedule). A synopsis of 40 CFR 280.20 - 280.45 follows. The type of release detection method used will vary with the type and age of the tank or pipeline. Remember that aircraft hydrant refueling systems and "field constructed" bulk tanks have been deferred and do not have to comply with 40 CFR 280 at this time. In addition to USTs used to store fuel, emergency generators are deferred from meeting the requirements for release detection. Emergency generator fuel tanks must comply with all other parts of this requirement.

Release Detection for Tanks

The following release detection requirements apply to tanks:

Option 1 - Combination of Precise Inventory Control and Tightness Testing
If tanks meet 40 CFR 280.20 new tank standards, tightness test is required every 5 yr. If tanks do not meet new tank standards, tightness test is required every year until 1998 when the tank must either meet new tank standards or be closed.

Option 2 - Combination of Precise Inventory Control and an Automated Gauging Device
The automatic gauging device must be able to detect a leak of 0.76 L/h (0.2 gal/h).

Option 3 - Vapor Monitoring in Soils Surrounding Tank
This method requires the following:

- Sandy or gravelly soils
- Monthly gas sampling
- Detection of vapor levels above background levels
- No interference from groundwater
- Sufficient number of vapor monitoring wells.

Option 4 - Groundwater Monitoring Near Tanks
This method requires the following:

- Stored liquid that is immiscible in water and has a specific gravity of less than 1
- Groundwater that is within 20 ft of ground surface
- Soils with hydraulic conductivity of 10^{-2} cm/s or greater
- Proper monitoring well design and proper number of wells
- Automatic or manual method capable of detecting a 0.33 cm (1/8 in.) layer of floating fuel.

Option 5 - Interstitial Monitoring
This method only applies to tanks surrounded by a secondary containment barrier. Monitoring wells must be placed between the tank and the containment barrier.

Option 6 - Any other Method (approved by the implementing agency)
This method must detect a 0.76 L/h (0.2 gal/h) leak or 568.5 L (150 gal) release per month with a 95 percent probability of false positives.

Pipeline Release Monitoring

The USEPA regulation places much more stringent requirements on pipes that convey regulated liquids under pressure. Whenever possible, base engineers should modify pumps and pipelines to reduce the length of pressurized piping. The following release detection requirements apply to piping:

Pressurized Piping

- Piping must be equipped with sensitive automatic leak detector with alarm or auto shut down capabilities
- Piping must have annual tightness test or monthly monitoring system for soil vapors, groundwater monitoring, interstitial monitoring, or other approved method of monitoring.

Suction Piping

- Piping must have a tightness test every 3 yr and in some cases, no release detection is required at all.

INSTALLATION:	COMPLIANCE CATEGORY: POL MANAGEMENT Worldwide ECAS	DATE:	REVIEWER(S):

STATUS NA C RMA	REVIEWER COMMENTS:

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Section 8

Solid Waste Management

SECTION 8

SOLID WASTE MANAGEMENT

A. Applicability of this Protocol

This protocol addresses the collection, storage, and disposal of solid waste at installations. Army Regulation (AR) 200-1, para 1-24c, requires OCONUS Installation Commanders (ICs) to respect host nation substantive standards and necessary procedural requirements for the management of solid waste. It also requires ICs to comply with the Department of the Army (DA) waste minimization requirements in general.

Solid waste is considered to be non-hazardous trash, rubbish, garbage, bulky wastes, liquids, or sludges generated by any installation operations and activities. It also includes any medical/pathological wastes generated by the military community hospital (some countries classify medical/pathological wastes as hazardous waste; consult local requirements).

This protocol also includes recycling and resource recovery activities since this form of solid waste management is required by Department of Defense (DOD) and Headquarters, Department of the Army (HQDA) directives.

B. DOD Regulations

- *Overseas Environmental Compliance Guidance Document*, October 1992, Chapter 7, includes criteria concerning the identification, classification, collection, transportation, storage, treatment, and safe disposal of solid waste. Chapter 8 addresses the management of medical waste.

- DOD Directive 4165.60, *Solid Waste Management*, 4 October 1976, provides guidance and direction to all DOD military communities on the topics of solid waste collection, disposal, material recovery, and recycling in agreement with the Solid Waste Disposal Act (SWDA). It specifically makes mandatory, at all DOD components, compliance with the standards found in 40 Code of Federal Regulations (CFR) 240, 241, 243, and 245 (see para V(A)).

C. Army Regulations (AR)

- AR 40-5, *Preventive Medicine*, 15 October 1990, details the procedures for handling infectious and pathological waste.

- AR 420-47, *Solid and Hazardous Waste Management*, 1 January 1985, details the operations and procedures to be followed in the storage and collection of solid waste.

D. Responsibility for Compliance

- The Directorate of Engineering and Housing (DEH) is responsible for site location, construction, and operation of on-site landfills and for the storage and transportation of solid wastes to either on-site or off-site disposal activities.

E. Key Compliance Definitions

These definitions were obtained from directives/instructions and ARs listed at the end of each definition. If there is no citation listed for the definition, it has been drawn from the U.S. CFR.

- *Bottom Ash* - the solid material that remains on a hearth or falls off the grate after thermal processing is complete (DOD Directive 4165.60, para V(A)).

- *Bulky Wastes* - large items of solid waste such as household appliances, furniture, large auto parts, trees, branches, stumps, and other oversized wastes whose large size precludes or complicates their handling by normal solid wastes collection, processing, or disposal methods (40 CFR 243.101 as adopted by DOD Directive 4165.60, para V(A), and OEBGD, Chapter 7, Definitions).

- *Carry-out Collection* - collection of solid waste from a storage area proximate to the dwelling unit(s) or establishment where generated (OEBGD, Chapter 7, Definitions).

- *Cell* - compacted solid wastes that are enclosed by natural soil or cover material in a land disposal site (40 CFR 241.101 as adopted by DOD Directive 4165.60, para V(A)).

- *Collection* - the act of consolidating solid wastes (or materials that have been separated for the purpose of recycling) from various locations (OEBGD, Chapter 7, Definitions).

- *Collection Frequency* - the number of times collection is provided in a given period of time (OEBGD, Chapter 7, Definitions).

- *Commercial Solid Waste* - all types of solid waste (excluding hazardous wastes) generated by stores, offices, clubs, cafeterias, dining facilities, warehouses, and other nonmanufacturing activities, excluding construction and demolition wastes (AR 420-47, Section II).

- *Commercial Solid Waste* - in addition to the above AR definition, all types of solid wastes generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding residential and industrial wastes (OEBGD, Chapter 7, Definitions).

- *Compactor Collection Vehicle* - a vehicle with an enclosed body, containing mechanical devices, that conveys solid waste into the main compartment of the body and compresses it into a smaller volume of greater density (OEBGD, Chapter 7, Definitions).

- *Construction and Demolition Waste* - the waste building materials, packaging, and rubble resulting from construction, remodeling, repair, and demolition operations on pavement, houses, commercial buildings, and other structures (OEBGD, Chapter 7, Definitions).

- *Cover Material* - soil or other suitable material used to cover compacted solid wastes in a land disposal site (40 CFR 241.101 as adopted by DOD Directive 4165.60, para V(A), and OEBGD, Chapter 7, Definitions).

- *Curb Collection* - collection of solid waste placed adjacent to a street (OEBGD, Chapter 7, Definitions).

- *Daily Cover* - cover material that is spread and compacted on the top and side slopes of compacted solid wastes at least at the end of each operating day in order to control vectors, fire, moisture, and erosion and to assure an aesthetic appearance (40 CFR 241.101 as adopted by DOD Directive 4165.60, para V(A)).

- *Daily Cover* - in addition to the above definition, solid material that is spread and compacted or synthetic material that is placed on the top and side slopes of compacted solid waste at least at the end of each operating day in order to control vectors, fire, moisture, and erosion and to assure an aesthetic appearance (OEBGD, Chapter 7, Definitions).

- *Final Cover* - cover materials that serve the same function as daily cover but, in addition, may be permanently exposed on the surface (40 CFR 241.101 as adopted by DOD Directive 4165.60, para V(A), and OEBGD, Chapter 7, Definitions).

- *Fly Ash* - suspended particles, charred paper, dust, soot, and other partially oxidized matter carried in the products of combustion (40 CFR 240.101 as adopted by DOD Directive 4165.60, para V(A)).

- *Food Waste* - organic residues, commonly called garbage, generated by the handling, storage, sale, preparation, cooking, and serving of foods (40 CFR 243.101 as adopted by DOD Directive 4165.60, para V(A), and OEBGD Chapter 7, Definitions).

- *Generation* - the act or process of producing solid waste (OEBGD, Chapter 7, Definitions).

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

- *Groundwater* - water present in the unsaturated zone of an aquifer (40 CFR 241.101 as adopted by DOD Directive 4165.60, para V(A)).

- *High-grade Paper* - letterhead, dry-copy paper, 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. High-grade paper is included in the commercial solid waste category (AR 420-47, Section II).

- *Human Blood and Blood Products Waste* - serum, plasma, and other blood components. Included are items contaminated with liquid or semiliquid blood or blood products, items saturated or dripping with blood or blood products, or items caked with blood or blood products that are capable of releasing these materials during handling (OEBGD, Chapter 8, Definitions).

- *Industrial Solid Waste* - solid waste generated by industrial processes and manufacturing (OEBGD, Chapter 7, Definitions).

- *Infectious Medical Waste* - solid waste, produced by medical and dental treatment facilities, that is specially managed because it has the potential for causing disease in man and may pose a risk to both individuals or community health if not managed properly. It includes microbiology waste, pathology waste, human blood and blood products, potentially infectious materials, sharps, and infection wastes from isolation rooms (OEBGD, Chapter 8, Definitions).

- *Infectious Waste* - any waste with pathogens of sufficient virulence and quality capable of causing an infectious disease in an exposed, susceptible host (AR 40-5, Section I).

- *Institutional Solid Waste* - solid wastes generated by educational, health care, correctional institutions, and other institutional facilities (40 CFR 243.101 as adopted by DOD Directive 4165.60, para V(A), and OEBGD, Chapter 7, Definitions).

- *Intermediate Cover* - cover material that serves the same function as daily cover but must resist erosion for a longer period of time because it is applied in areas where additional cells are not to be constructed for extended periods of time (40 CFR 241.101 as adopted by DOD Directive 4165.60, para V(A)).

- *Land Application Unit* - an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for agricultural purposes or for treatment or disposal (OEBGD, Chapter 7, Definitions).

- *Microbiology Waste* - includes cultures and stocks of etiologic agents that due to their species, type, virulence, or concentration, are known to cause disease in humans (OEBGD, Chapter 8, Definitions).

- *Multiple Container* - refuse container boxes normally 1 to 10 cubic yards (cu yd) in capacity used with all types of waste collection vehicles (AR 420-47, Section II).

- *Municipal Solid Waste* - normally, residential and commercial solid waste generated within a community, not including yard waste (OEBGD, Chapter 7, Definitions).

- *Municipal Solid Waste Landfill Unit (MSWLF)* - a discrete area of land or an excavation, on or off the installation, that receives household waste and that is not a land application unit, surface impoundment, injection well, or waste pile. An MSWLF unit also may receive other types of wastes, such as commercial solid waste and industrial waste (OEBGD, Chapter 7, Definitions).

- *Noninfectious Medical Waste* - solid waste created in medical and dental treatment facilities that does not require special management because it has been determined to be incapable of causing disease in humans or it has been treated to render it noninfectious (OEBGD, Chapter 8, Definitions).

- *Office Waste* - solid waste generated in the buildings or rooms in which the affairs of business, professional people, and branches of government, are carried on. Excluded is waste generated in cafeterias, snack bars, or other food preparation and sales areas, and waste separated by medical personnel (AR 420-47, Section II).

- *Open Burning* - burning of solid wastes in the open, such as in an open dump (OEBGD, Chapter 7, Definitions).

- *Open Dump* - a land disposal site where 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 as adopted by DOD Directive 4165.60, para V(A) and OEBGD, Chapter 7, Definitions).

- *Pathological Wastes* - any wastes that include anatomical parts of humans and animals, excluding human corpses and animal carcasses (AR 40-5, Section I).

- *Recoverable Resources* - materials that have useful physical or chemical properties after serving their original purposes. Recoverable resources can be resued or recycled for the same or other purposes (AR 200-1, Section II).

- *Recyclable Materials* - materials that normally have been or would be discarded (such as scrap and waste) and materials that may be reused after undergoing some type of physical or chemical processing. Recyclable materials may include discarded materials that have undergone demilitarization or mutilation at an installation prior to transfer to the property disposal office for sale. Recyclable materials do not include:

  a) precious metal-bearing scrap

  b) those items that may be used again for their original purposes or functions without any special processing, such as used vehicles, vehicle or machine parts, bottles (not scrap glass), electrical components and unopened containers of unused oil or solvents (AR 420-47, Section II).

- *Recycling* - the process by which recovered materials are transformed into new or usable products (AR 420-47, Section II).

- *Regulated Wastes* - liquid or semiliquid blood or other potentially infectious materials, or contaminated items that would release blood or other potentially infectious materials in a liquid or semiliquid state if compressed. Also included are items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling, or through contaminated sharps or pathological and microbiological wastes containing blood or other potentially infectious materials.

- *Residential Solid Waste* - includes garbage, rubbish, trash, and other solid waste resulting from the normal activities of households (AR 420-47, Section II).

- *Resource Recovery* - the process of obtaining materials or energy from solid waste or used petroleum, oil, and lubricant (POL) products (AR 420-47, Section II).

- *Resource Recovery Facility* - Any physical plant that processes residential, commercial, or institutional solid waste biologically, chemically, or physically, and recovers useful products (such as shredded fuel, combustible oil or gas, steam, metal, or glass) for resale or reuse (AR 420-47, Section II).

- *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 as adopted by DOD Directive 4165.60, para V(A) and OEBGD, Chapter 7, Definitions).

- *Sludge* - the accumulated semiliquid suspension of settled solids deposited from wastewaters or other fluids in tanks or basins (AR 420-47, Section II and OEBGD, Chapter 7, Definitions).

- *Solid Waste* - garbage, refuse, sludge, and other waste materials not excluded by Federal regulations. Any solid, liquid, semisolid, or contained gaseous materials resulting from institutional, industrial, commercial, mining, agricultural, or community operations and activities. They are discarded or being accumulated, stored, or treated prior to being discarded. Infectious wastes are not included in this category for purposes related to recycling. A material is discarded if it is abandoned (and not used, reused, reclaimed, or recycled) by being disposed of, burned, or treated (AR 420-47, Section II).

- *Solid Waste Storage Container* - a receptacle used for the temporary storage of solid waste while awaiting collection (OEBGD, Chapter 7, Definitions).

- *Source Separation* - the separation of recyclable materials at their point of generation by the waste generator (AR 420-47, Section II).

- *Storage* - the interim containment of solid waste after generation and prior to collection for ultimate recovery or disposal (OEBGD, Chapter 7, Definitions).

- *Street Wastes* - material picked up by manual or mechanical sweepings of alleys, streets, and sidewalks, wastes from public waste receptacles, and material removed from catch basins (OEBGD, Chapter 7, Definitions).

- *Thermal Processing* - processing of waste material by means of heat (40 CFR 240.101 as adopted by DOD Directive 4165.60, para V(A)).

- *Transfer Station* - a station where 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 as adopted by DOD Directive 4165.60, para V(A) and OEBGD, Chapter 7, Definitions).

- *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 infected with HIV, HBV, and other bloodborne pathogens.

- *Vector* - a carrier, usually an arthropod, that is capable of transmitting a pathogen from one organism to another (40 CFR 240.202 as adopted by DOD Directive 4165.60, para V(A) and OEBGD, Chapter 7, Definitions).

- *Working Face* - that portion of the land disposal site where solid wastes are discharged and are spread and compacted prior to the placement of cover material (40 CFR 241.101 as adopted by DOD Directive 4165.60, para V(A)).

- *Yard Waste* - grass and shrubbery clippings, tree limbs, leaves, and similar organic materials commonly generated in residential yard maintenance (also known as green waste) (OEBGD, Chapter 7, Definitions).

SOLID WASTE MANAGEMENT

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All installations	8-1 through 8-4	(1)(2)
Recycling	8-5 through 8-9	(1)(2)(9)
Solid waste storage and collection	8-10 through 8-21	(1)(2)(9)(20)(21)
On-site land disposal	8-22 and 8-25	(1)(2)(9)
Operations	8-26 through 8-38	(1)(2)(9)
Closure	8-39	(1)(2)(9)
New landfills	8-40 through 8-42	(1)(2)(9)
Thermal processing facilities	8-43 through 8-56	(1)(2)(9)
Resource recovery facilities	8-57 through 8-60	(1)(2)(9)
Medical/pathological wastes	8-61 through 8-76	(1)(3)

(a)CONTACT CODE:

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(2) Environmental Coordinator (EC)
(3) Preventive Medicine Officer
(9) Chief of Operations and Maintenance (O&M)
(20) Director of Contracting (DOC)
(21) Public Affairs Office (PAO)

SOLID WASTE MANAGEMENT

Records to Review

- Record of current nonhazardous solid waste management practices
- Documentation of locations (map) and descriptions of all nonhazardous waste treatment, storage, and disposal facilities (TSDFs)
- Records of operational history of all active and inactive TSDFs
- Environmental monitoring procedures or plans and analytical results
- Records of resource recovery practices, including the sale of materials for the purpose of recycling
- Solid waste removal contracts and inspection records
- Regional solid waste management plan
- Unique state and local rules for handling solid waste
- Installation solid waste management plans, Standing Operating Procedures (SOPs)
- Any regulatory agreement, waivers, exemptions, inspection reports, complaince orders, and notices relating to solid waste program
- Groundwater well monitoring data

Physical Features to Inspect

- Resource recovery facilities
- Incineration and land disposal facilities (active and inactive)
- Areas where nonhazardous waste is disposed of
- Construction debris areas
- Waste receptacles
- Solid waste vehicle storage and washing areas
- Groundwater monitoring wells
- Methane gas vents at landfills

People to Interview

- Directorate of Engineering and Housing (DEH)
- Environmental Coordinator (EC)
- Preventive Medicine Officer
- Chief of Operations and Maintenance (O&M)
- Director of Contracting (DOC)
- Public Affairs Office (PAO)

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL INSTALLATIONS	
8-1. Determine actions or changes since previous review of solid waste management (GMP).	Check copy of previous review report and determine if noncompliance issues were resolved. (1)(2)
...	...
8-2. Copies of all relevant DOD directives/ instructions, ARs, and guidance documents on solid waste should be maintained at the installation (GMP).	Determine if copies of the following are current and available at the installation: (1) - *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992. - DOD Directive 4165.60, *Solid Waste Collection, Disposal, Material Recovery, and Recycling*, 4 October 1976. - AR 40-5, *Preventive Medicine*, 15 October 1990. - AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990. - AR 420-47, *Solid and Hazardous Waste Management*, 1 January 1985.
...	...
8-3. Installations are required to comply with applicable MACOM regulations and substantive host nation regulations concerning solid waste (AR 200-1, para 1-40).	Verify that the installation is complying with the Major Army Command (MACOM) and host nation requirements. (1) (NOTE: Issues that may be regulated by MACOM or host nation agencies include: - license or permit requirements for existing on-site landfills - requirements for filing a closure plan for on-site landfill specifying monitoring and inspection procedures - design and operations specifications for solid waste receptacles - disposal of solid waste off-site only at a licensed or permitted facility - 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 installation heating plant operations before sale or disposal - handling and disposal of medical, pathological, and infectious wastes - recycling requirements - used tires.)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-4. Buildings and all other facilities that are constructed, modified, or leased after the effective date of the OEBGD must provide for storage areas that can be easily cleaned and maintained and that allow for safe and efficient collection of solid waste (OEBGD, Chapter 7, Criteria 6).	Verify that buildings and facilities in the design phase will have appropriate solid waste storage areas. (1)(2)
...	...
RECYCLING	
8-5. Army installations will institute, where cost effective, recycling programs and reduce the volume of solid waste materials at the source (OEBGD, Chapter 7, Criteria 9; DOD 4165.60, para V(a), V(c), and V(h)).	Determine if a solid waste reduction/resource recovery program exists. (1)(9) Verify that recycling program is in compliance with applicable state or local requirements. (1)(2) Verify that reusable or marketable materials are collected at regular intervals. (2)
...	...
8-6. Installations with office facilities of over 100 office workers are required to recover high-grade paper (DOD Directive 4165.60, para V(I)).	Determine if the installation has over 100 office workers. (2) Verify that high-grade paper is separated at the source of generation. (2) Verify that high-grade paper is separately collected. (2) Verify that high-grade paper is sold for recycling. (2)
...	...
8-7. Installations where more than 500 families reside are required to recycle newspapers (40 CFR 246.201-1 and DOD Directive 4165.60, para V(J)).	Determine if the installation has more than 500 families residing on it. (2) Verify that used newspapers are separated at the source of generation. (2) Verify that used newspapers are separately collected. (2) Verify that used newspapers are sold for recycling. (2)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-8. Any installation generating 10 or more tons of waste corrugated containers per month is required to sell this material for recycling (DOD Directive 4165.60, para V(K)).	Determine if the installation generates 10,160 kilograms (kg), or 10 or more tons of waste corrugated containers per month. (2) Verify that waste corrugated containers are collected separately. (2) Verify that waste corrugated containers are sold for recycling. (2)
...	...
8-9. Installations that recycle lead acid batteries are required to manage them as hazardous materials (OEBGD, Chapter 6, Section 9, Criteria 3).	Verify that lead acid batteries that are awaiting recycling are handled as hazardous materials. (2)
...	...
SOLID WASTE STORAGE AND COLLECTION	
8-10. Installations generating more than 101,600 kg, or 100 tons or more per day of residential, commercial, and institutional solid waste after complying with waste reduction and source separation policies, shall establish and/or use resource recovery facilities to separate and recover materials or energy, or both, from solid waste (DOD Directive 4165.60(V)(F) and 4165.60(V)(H)).	Determine if the installation meets the listed criteria. (1) Verify that a resource recovery facility is used. (1)(2) Verify that joint or regional civilian community resource recovery facilities are utilized whenever possible. (1)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-11. Army installations are required to follow specific requirements for solid waste storage, collection and cleaning of equipment (AR 200-1, para 6-12b).	Verify that all solid waste is stored such that: (1)(2)(20) - it is not a fire, health, or safety hazard - it does not provide food or harborage for disease vectors - it is contained or bundled to prevent spills. Confirm frequency of collection and system for handling complaints. (1)(2)(20) Verify that the DEH keeps records of actions taken to correct or repair any part of the distribution system (AR 420-46). (1)(9)
...	...
8-12. Solid waste storage containers are required to meet specific design and location standards (OEBGD, Chapter 7, Criteria 7 and 8).	Verify that storage containers are leakproof, waterproof, and vermin-proof, including sides, seams, and bottoms. (1)(9) Verify that storage containers are durable enough to withstand anticipated usage. (1)(9) Verify that storage containers have functional lids. (1)(9) Verify that containers are stored on a firm, level, well-drained surface that is large enough to accommodate all of the containers and that is maintained in a clean, spillage-free condition. (1)(9)
...	...
8-13. Installation industrial shop waste receptacles should be inspected quarterly to verify that hazardous wastes are not being deposited (GMP).	Verify that records and interviews confirm that receptacles were inspected. (1) Verify that corrective actions were taken where necessary. (1)(2) Inspect a sample of solid waste receptacles at shops for presence of hazardous waste. (1)(2)
...	...
8-14. Installation personnel should be periodically informed about materials that are prohibited from disposal in solid waste receptacles (GMP).	Verify that a program exists at the installation to keep personnel informed about proper waste disposal practices. (1)(21)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-15. Installations are required to store all solid wastes and materials separated for recycling according to specific guidelines (OEBGD, Chapter 7, Criterias 4 and 5; AR 420-47, para 3-4b through para 3-4d, and DOD Directive 4165.60, para V(A)).	Verify that all solid wastes are stored so as not cause a fire, health or safety hazard. (1)(2) Verify that all solid waste containing food wastes are stored in covered or closed containers that are nonabsorbent, leakproof, durable, easily cleaned, and designed for safe handling. (1)(2) Verify that solid waste containers are of an adequate size and number to contain all waste generated between collections. (1)(2) 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 by removing all doors from large household appliances and covering the items. (1)(2) Verify that bulky wastes are screened for the presence of hazardous constituents and ozone depleting substances. (1)(2) Verify that reusable containers are capable of being serviced without the collector coming into contact with the waste. (1)(2)
...	...
8-16. All installations are required to operate their collection systems in a manner to protect the health and safety of personnel associated with the operation (AR 420-47, para 3-5 and DOD Directive 4165.60, para V(A)).	Verify that the collection system is operated safely. (1)(2)
...	...
8-17. Installations are required to maintain collection equipment according to certain standards if such equipment is considered to be operating in interstate or foreign commerce (AR 420-47, para 3-6a and DOD Directive 4165.60, para V(A)).	Verify that all vehicles used for the collection and transportation of solid waste meet all applicable standards established by the Federal Government, including: (1)(2) - Motor Carrier Safety Standards (49 CFR Parts 390 through 396) - Noise Emission Standards for Motor Carriers Engaged in Interstate Commerce (40 CFR Part 202) - Federal Motor Vehicle Safety Standards (49 CFR Parts 500 through 580) (Federally owned collection equipment only).
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-18. All collection equipment is required to meet specific criteria (AR 420-47, para 3-6b through para 3-6d and DOD Directive 4165.60, para V(A)).	Verify that all vehicles used for collection and transportation of solid wastes or materials separated for recycling are enclosed and have suitable covers to prevent spillage. (2) Verify that equipment used in the compaction, collection, and transportation of solid waste or materials separated for recycling are constructed, operated, and maintained adequately. (2) Verify that the following types of equipment meet the standards established by the American National Standards Institute: (2) - 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.
...	...
8-19. All installations are required to collect solid wastes or materials separated for recycling according to a certain schedule (DOD Directive 4165.60, para V(A) and AR 420-47, para 3-7).	Verify that solid wastes that contain food wastes are collected at a minimum of once a week. (1)(2) Verify that bulky wastes are collected at a minimum of once every 3 months (mo). (1)(2) Verify that all wastes are collected with sufficient frequency to inhibit the propagation or attraction of vectors and the creation of nuisances. (1)(2)
...	...
8-20. Installations are required to collect solid waste in a safe and efficient manner (DOD Directive 4165.60, para V(A) and AR 420-47, para 3-8).	Verify that solid wastes or materials separated for recycling are collected in a safe, efficient manner. (1)(2) Verify that the collection vehicle operator immediately cleans up any spillage caused by his or her operations. (1)(2)
...	...
8-21. Solid waste disposed of off-site must be disposed of only at licensed or permitted facilities (DOD Directive 4165.60, para V).	Verify, through interviews and records search, that off-site landfills receiving installation wastes are licensed or permitted. (1)(2)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
ON-SITE LAND DISPOSAL	
Specific Wastes	
8-22. Bulky wastes must be disposed of according to certain methods (DOD Directive 4165.60, para V(A)).	Verify that automobile bodies, furniture, and appliances are either salvaged or crushed and pushed onto the working face near the bottom of the cell. (1)(2)(9) Verify that demolition and construction debris, tree stumps, and large timbers are pushed onto the working face near the bottom of the cell. (1)(2)(9)
...	...
8-23. Water treatment plant sludges must be disposed of according to certain methods (DOD Directive 4165.60, para V(A)).	Verify that water treatment plant sludges are covered with soil or municipal solid wastes. (1)(2)(9)
...	...
8-24. Incinerator and air pollution control residues must be disposed of according to certain methods (DOD Directive 4165.60, para V(A)).	Verify that incinerator and air pollution control residues are incorporated into the face and covered as necessary to prevent them from becoming airborne. (1)(2)(9)
...	...
8-25. Installations are required to develop procedures for dealing with yard waste and construction debris that keep the waste out of municipal solid waste landfills to the maximum extent possible (OEBGD, Chapter 7, Criterias 12(d) and 12(f)).	Determine if the installation has investigated the options of composting and recycling. (1)(2)(9)
...	...
Operations	
8-26. Facilities are required to place cover material at the end of each operating day (DOD Directive 4165.60, para V(A)).	Verify that cover material is put in place daily. (1)(2)(9)

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-27. Land disposal sites that accept special wastes must have approval of the responsible agency (DOD Directive 4165.60, para V(A)).	Determine if the land disposal site accepts special wastes. (1)(2)(9) Verify that the land disposal site has agency approval to accept special wastes. (1)(2)(9)
...	...
8-28. A program must be implemented to detect and prevent the disposal of hazardous waste, infectious waste, Polychlorinated biphenyl (PCB) waste, bulk or non-containerized liquids, and waste determined to be unsuitable to the specific site (OEBGD, Chapter 7, Criteria 12(c) and 12(m)).	Verify that the disposal of hazardous waste, infectious waste, PCB waste, bulk and non-containerized liquids, and other unsuitable waste is not allowed. (1)(2)(9)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-29. Installations that operate land disposal sites are required to provide a list of excluded materials to regular users and develop criteria for unacceptable materials (OEBGD, Chapter 7, Criteria 12(b) and DOD Directive 4165.60, para V(A)).	Verify that a list of excluded materials is displayed prominently at the site entrance. (1)(2)(9) Verify that a list of excluded materials is given to all regular users of the site. (1)(2)(9) Verify that the installation has established criteria for unacceptable wastes based on site-specific factors. (1)(2)(9)
...	...
8-30. Land disposal sites are required to operate in a manner that will protect water quality (OEBGD, Chapter 7, Criteria 12(k), and DOD Directive 4165.60, para V(A)).	Verify that surface water courses and runoff are diverted from the land disposal site. (1)(2)(9) Verify that the land disposal site is constructed and graded to promote rapid surface water runoff without excessive erosion. (1)(2)(9) Verify that regrading is done as necessary to avoid ponding of precipitation and to maintain cover material integrity. (1)(2)(9) Verify that siltation or retention basins or other approved methods of retarding runoff are used where necessary to avoid stream siltation or flooding problems. (1)(2)(9) Verify that leachate collection and treatment systems are used where necessary to protect groundwater and surface water resources. (1)(2)(9) Verify that municipal solid wastes and leachate are not in contact with groundwater or surface water. (1)(2)(9) Verify that aquifers will not be contaminated. (1)(2)(9)
...	...
8-31. Land disposal sites are required to operate in a manner that will protect air quality (OEBGD, Chapter 7, Criteria 12(e) and DOD Directive 4165.60, para V(A)).	Verify that there is no open burning of municipal solid wastes. (1)(2)(9) (NOTE: Infrequent burning of agricultural wastes, silvicultural wastes, land-clearing debris, diseased trees, or debris from emergency clean-up operations is allowed.) Verify that dust control measures are initiated as necessary. (1)(2)(9)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-32. Land disposal sites are required to control decomposition gases (OEBGD, Chapter 7, Criteria 12(i) and DOD Directive 4165.60, para V(A)).	Verify that decomposition gases are not allowed to migrate laterally from the land disposal site. (1)(2)(9) Verify that decomposition gases do not pose an explosion or toxicity hazard. (1)(2)(9) Verify that methane gas does not exceed 25 percent of the lower explosive limit for methane in facility structures. (1)(2)(9)
...	...
8-33. Land disposal sites are required to control vectors (OEBGD, Chapter 7, Criteria 12(h) and DOD Directive 4165.60, para V(A)).	Verify that vector control contingency programs are implemented when necessary to prevent or rectify vector problems. (1)(2)(9)
...	...
8-34. Land disposal sites are required to be designed and operated in an aesthetically acceptable manner and public access controlled (OEBGD, Chapter 7, Criteria 12(j) and 12(l); DOD Directive 4165.60, para V(A)).	Verify that blowing litter is controlled through portable litter fences or other devices. (1)(2)(9) Verify that wastes that are easily moved by wind are covered as necessary to prevent their becoming airborne. (1)(2)(9) Verify that on-site vegetation is cleared only as necessary. (1)(2)(9) Verify that natural windbreaks are maintained. (1)(2)(9) Verify that buffer strips and/or berms are used to screen the site from nearby residences and major roadways. (1)(2)(9) Verify that salvage material is removed from the site frequently. (1)(2)(9) Verify that public access is controlled. (1)(2)(9)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
8-35. Land disposal site cover material is required to meet certain criteria (DOD Directive 4165.60, para V(A)).	Verify that cover material is applied as necessary to: (1)(2)(9) - minimize fire hazards - minimize infiltration of precipitation - minimize odors - minimize blowing litter - control gas venting - control vectors - discourage scavenging - provide a pleasing appearance. Verify that cover material is applied daily, regardless of weather. (1)(2)(9) Verify that intermediate cover is applied on areas where additional cells are not to be constructed for extended periods of time. (1)(2)(9) Verify that final cover is applied on each area as it is completed or if the area is to remain idle for over 1 year (yr). (1)(2)(9)
...	...
8-36. Municipal solid waste and cover material must be compacted to the smallest practicable volume (OEBGD, Chapter 7, Criteria 12(a); DOD Directive 4165.60, para V(A)).	Verify that on an operating day, municipal solid waste handling equipment is capable of performing the following functions: (1)(2)(9) - spread solid waste in layers no more than 0.6 meters (m) (2 feet (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.
...	...
8-37. Land disposal sites are required to be designed, constructed, and operated to protect the health and safety of personnel (OEBGD, Chapter 7, Criteria 12(g) and DOD Directive 4165.60, para V(A)).	Verify that a safety manual is available to employees. (1)(2)(9) Verify that personal safety devices are provided to facility employees. (1)(2)(9) Verify that equipment is provided with safety devices. (1)(2)(9) Verify that provisions to extinguish fires exist. (1)(2)(9) Verify that communications equipment is available on site. (1)(2)(9) Verify that scavenging is prohibited. (1)(2)(9) Verify that access to the site is controlled. (1)(2)(9) Verify that traffic signs or markers are provided to promote an orderly traffic pattern to and from the discharge area. (1)(2)(9)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-38. Operators of land disposal sites are required to maintain records and monitor data (OEBGD, Chapter 7, Criteria 12(n) and DOD Directive 4165.60, para V(A)). ...	Verify that records are maintained and cover at least: (1)(2)(9) - 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 analyses upstream and downstream from the site - vector control efforts - dust and litter control efforts - quantitative measurements of the solid wastes handled - description of solid waste materials received. ...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Closure **8-39.** During closure and post-closure operations, specific actions must occur (OEBGD, Chapter 7, Criteria 13 and DOD Directive 4165.60, para V(A)).	Verify that a final cover is installed that is designed to minimize infiltration and erosion. (1)(2)(9) Verify that the infiltration layer is made up of a minimum of 46 centimeters (cm), or 18 inches (in.) of earthen material, geotextiles, or combination thereof that have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present, or to a permeability no greater than 0.00005 cm/second (s), whichever is less. (1)(2)(9) Verify that the erosion layer is a minimum of 12 cm (8 in.) of earth material that can sustain native plant growth. (1)(2)(9) Verify that there is a written closure plan including: (1)(2)(9) - a description of the monitoring and maintenance activities required to ensure the integrity of the final cover - a description of planned uses during the post-closure period - a survey plot showing the exact site location. Verify that upon closure of a site, a detailed description is recorded with the area's land recording authority. (1)(2)(9) (NOTE: Post-closure period will be a minimum of 5 yr.)
...	...
NEW LANDFILLS **8-40.** Installations will not initiate new or expand existing waste landfill units without approval of the Component and only after justification of the unique circumstances (OEBGD, Chapter 7, Criteria 10).	Determine if the installation is planning on starting a new landfill or expanding an existing one. (1)(2)(9) Verify that appropriate approval has been received. (1)(2)(9)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-41. New municipal solid waste landfills are required to meet certain location and design criteria (OEBGD, Chapter 7, Criteria 11; DOD Directive 4165.60, para V(A)).	Verify that the hydrogeology of the site has been evaluated. (1)(2)(9) Verify that on-site soil characteristics have been evaluated. (1)(2)(9) Verify that environmental factors, climatic conditions, and socioeconomic factors have been considered in site selection. (1)(2)(9) Verify that the site is easily accessible to vehicles. (1)(2)(9) Verify that the site location will not attract birds and pose a hazard to low-flying aircraft. (1)(2)(9) Verify that the site will exclude hazardous wastes. (1)(2)(9) Verify that there will be: (1)(2)(9) - daily cover - disease vector control - explosive gas control - no open burning - appropriate records kept - an inspection program.
...	...
8-42. 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 (DOD Directive 4165.60, para V(A)).	Verify that a professional engineer has prepared or approved plans. (1)(2)(9)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
THERMAL PROCESSING FACILITIES	
8-43. Installations with thermal processing facilities designed to process or that are processing 50,800 kg, or 50 tons or more per day of municipal solid wastes are required to provide special areas for some wastes while they await processing (DOD Directive 4165.60, para V(A)).	Verify that storage areas for bulky wastes, digested and dewatered sludges from wastewater treatment facilities, raw sewage sludges, and septic tank pumpings are clearly marked. (1)(2)(9) (NOTE: This does not apply to hazardous, agricultural, or mining wastes.)
...	...
8-44. Installations with thermal processing facilities designed to process or that are processing 50,800 kg, or 50 tons or more per day of municipal solid wastes are required to train personnel in any unusual handling requirements for accepting certain wastes (DOD Directive 4165.60, para V(A)).	Verify that personnel are thoroughly trained to handle bulky wastes, digested and dewatered sludges from wastewater treatment facilities, raw sewage sludges, and septic tank pumpings. (1)(2)(9) (NOTE: This does not apply to hazardous, agricultural, or mining wastes.)
...	...
8-45. Installations with thermal processing facilities designed to process or that are processing 50,800 kg, or 50 tons or more per day of municipal solid wastes are required to inform regular users about materials that are excluded (DOD Directive 4165.60, para V(A)).	Verify that regular users are given a list of excluded materials. (1)(2)(9) Verify that a list of excluded materials is posted prominently at the facility. (1)(2)(9) (NOTE: This does not apply to hazardous, agricultural, or mining wastes.)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-46. Installations with thermal processing facilities designed to process or that are processing 50,800 kg, or 50 tons or more per day of municipal solid wastes are required to have certain procedures and precautions to deal with unacceptable wastes that are delivered to or left at the facility (DOD Directive 4165.60, para V(A)).	Verify that there is an operating plan that specifies procedures and precautions to be taken if unacceptable wastes that are delivered to or left at the facility. (1)(2)(9) Verify that operating personnel are thoroughly trained in such procedures. (1)(2)(9) (NOTE: This does not apply to hazardous, agricultural, or mining wastes.)
...	...
8-47. Installations with thermal processing facilities designed to process or that are processing 50,800 kg, or 50 tons or more per day of municipal solid wastes are required to meet certain site selection criteria (DOD Directive 4165.60, para V(A)).	Verify that the facility is located in an area zoned for industrial use and has adequate utilities to serve it. (1)(2)(9) Verify that the site is accessible by permanent roads leading from the public road system. (1)(2)(9) (NOTE: This does not apply to hazardous, agricultural, or mining wastes.)
...	...
8-48. Installations with thermal processing facilities designed to process or that are processing 50,800kg, or 50 tons or more per day of municipal solid wastes are required to have plans for the design of new facilities or modifications of existing facilities prepared or approved by a professional engineer (DOD Directive 4165.60, para V(A)).	Verify that a professional engineer prepares or approves plans for the design of new facilities or modification of existing facilities. (1)(2)(9) (NOTE: This does not apply to hazardous, agricultural, or mining wastes.)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
8-49. Installations with thermal processing facilities designed to process or that are processing 50,800 kg, or 50 tons or more per day of municipal solid wastes are required to operate in a manner that protects water quality (DOD Directive 4165.60, para V(A)).	Verify that all waters discharged from the facility are treated to meet the most stringent of applicable water quality standards. (1)(2)(9) Verify that when monitoring equipment indicates excessive discharge contamination, appropriate adjustments are made to lower the concentrations to acceptable levels. (1)(2)(9) Verify that in the event of an accidental spill, the local regulatory agency is notified immediately. (1)(2)(9) (NOTE: This does not apply to hazardous, agricultural, or mining wastes.)
...	...
8-50. Installations with thermal processing facilities designed to process or that are processing 50,800 kg, or 50 tons or more per day of municipal solid wastes are required to operate in a manner that protect airs quality (DOD Directive 4165.60, para V(A)).	Verify that emissions do not exceed applicable, existing emission standards. (1)(2)(9) Verify that all emissions, including dust from vents, are controlled. (1)(2)(9) Verify that when monitoring equipment indicates excessive emissions, appropriate adjustments are made to lower the emissions to acceptable levels. (1)(2)(9) (NOTE: This does not apply to hazardous, agricultural, or mining wastes.)
...	...
8-51. Installations with thermal processing facilities designed to process or that are processing 50,800 kg, or 50 tons or more per day of municipal solid wastes are required to control vectors (DOD Directive 4165.60, para V(A)).	Verify that a housekeeping schedule is established and maintained. (1)(2)(9) Verify that solid waste and residue do not accumulate at the facility for more than 1 week. (1)(2)(9) (NOTE: This does not apply to hazardous, agricultural, or mining wastes.)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-52. Installations with thermal processing facilities designed to process or that are processing 50,800 kg, or 50 tons or more per day of municipal solid wastes are required to operate in an aesthetically acceptable manner (DOD DOD Directive 4165.60, para V(A)).	Verify that a routine housekeeping and litter removal schedule is established and implemented. (1)(2)(9) Verify that solid wastes that cannot be processed by the facility are removed on a weekly basis. (1)(2)(9) (NOTE: This does not apply to hazardous, agricultural, or mining wastes.)
...	...
8-53. Installations with thermal processing facilities designed to process or that are processing 50,800 kg, or 50 tons or more per day of municipal solid wastes are required to dispose of residue and other solid waste products resulting from the thermal process in an environmentally acceptable manner (DOD Directive 4165.60, para V(A)).	Verify that the furnace operator records, in a log, the estimated percentage of unburned combustibles. (1)(2)(9) Verify that if residue or fly ash is collected in a wet condition, it is drained of free moisture. (1)(2)(9) Verify that residue and fly ash are transported by means that prevent the loads from shifting, falling, or blowing from the container. (1)(2)(9) (NOTE: This does not apply to hazardous, agricultural, or mining wastes.)
...	...
8-54. Installations with thermal processing facilities designed to process or that are processing 50,800 kg, or 50 tons or more per day of municipal solid wastes are required to be designed, operated, and maintained in a manner to protect the health and safety of personnel (DOD Directive 4165.60, para V(A)).	Verify that procedures are developed for operation in emergency situations. (1)(2)(9) Verify that approved respirators or self-contained breathing apparatus are available at convenient locations. (1)(2)(9) Verify that training in first aid practices and emergency procedures are given to all personnel. (1)(2)(9) Verify that personal safety devices are provided to all personnel. (1)(2)(9) Verify that any regular user or employee that poses a safety hazard is barred from the facility and reported to the responsible agency. (1)(2)(9) (NOTE: This does not apply to hazardous, agricultural, or mining wastes.)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
8-55. Installations with thermal processing facilities designed to process or that are processing 50,800 kg, or 50 tons or more per day of municipal solid wastes are required to follow certain general operation criteria (DOD Directive 4165.60, para V(A)).	Verify that the facility supervisor is experienced in the operation of the type of facility designed. (1)(2)(9) Verify that alternate and standby disposal and operating procedures are established for implementation during emergencies, air pollution episodes, and shutdown periods. (1)(2)(9) Verify that a routine maintenance schedule is established. (1)(2)(9) Verify that engineering drawings are updated as the facility is modified. (1)(2)(9) Verify that key operational procedures are prominently posted. (1)(2)(9) Verify that equipment manuals, catalogs, spare parts lists, and spare parts are readily available at the facility. (1)(2)(9) Verify that training opportunities are available for personnel. (1)(2)(9) (NOTE: This does not apply to hazardous, agricultural, or mining wastes.)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-56. Installations with thermal processing facilities designed to process or that are processing 50,800 kg, or 50 tons or more per day of municipal solid wastes are required to provide records and monitoring data (DOD Directive 4165.60, para V(A)).	Verify that extensive monitoring and recordkeeping are practiced during: (1)(2)(9) - the first 12 to 18 mo of operation of a new or renovated facility - periods of high air pollution - periods of upset conditions at the facility. Verify that operating records are kept in a daily log and include as a minimum: (1)(2)(9) - the total weight and volume of solid waste received during each shift, including the number of loads received, the ownership or specific identity of delivery vehicles, and the source and nature of the solid wastes accepted - furnace and combustion chamber temperatures recorded at least every 60 minutes (min) and as changes are made, including explanations for abnormally high and low temperatures - rate of operation, such as grate speed - overfire and underfire air volumes and pressure and distribution recorded at least every 60 min and as changes are made - weights of bottom ash, grate siftings, and fly ash, individually or combined, recorded at intervals appropriate to normal facility operation - estimated percentages of unburned material in the bottom ash - water used on each shift for bottom ash quenching and scrubber operation (NOTE: Representative samples of process waters should be collected and analyzed as recommended by the responsible agency.) - power produced and utilized during each shift - quality, production totals, and consumption rates if steam is produced - auxiliary fuel used for each shift - gross calorific value of daily representative samples of bottom ash, grate siftings, and fly ash (NOTE: Sampling time should be varied so that all shifts are monitored on a weekly basis.) - required emission measurements and laboratory analyses - complete records of monitoring instruments - problems encountered and methods of solution. Verify that an annual report is prepared and that it includes the following information: (1)(2)(9) - minimum, average, and maximum daily volume and weight of waste received and processed, summarized on a monthly basis - summary of the laboratory analyses, including at least monthly averages

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-56. (continued)	- number and qualifications of personnel in each job category - total workhours per week - number of state certified or licensed personnel - staffing deficiencies - serious injuries, their cause, and preventive measures instituted - identification and brief discussion of major operational problems and solutions - adequacy of operation and performance with regard to environmental requirements, general level of housekeeping and maintenance, testing and reporting proficiency, and recommendations for corrective actions - copy of all significant correspondence, reports, inspection reports, and any other communications from enforcement agencies. Verify that a methodology for evaluating the facility's performance has been developed. (1)(2)(9) (NOTE: This does not apply to hazardous, agricultural, or mining wastes.)
...	...
RESOURCE RECOVERY FACILITIES	
8-57. Installations are required to establish or utilize resource recovery facilities (DOD Directive 4165.60, para V(A)).	Verify that a resource recovery facility has been established or utilized unless the installation has made a determination not to utilize or establish a resource recovery facility. (1)(2)(9)
...	...
8-58. Installations that establish or utilize a resource recovery facility are required to design such facilities to process a standard amount of solid waste (DOD Directive 4165.60, para V(A)).	Verify that the facility is designed to process at least 65 percent by wet weight of the input solid waste into recycled material, fuel, or energy. (1)(2)(9)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
COMPOSTING FACILITIES **8-59.** Composting facilities that process annually 5000 tons of sludge from a domestic wastewater treatment plant are required to meet specific standards (OEBGD, Chapter 7, Criteria 15 and 16). ...	Verify that a record is maintained for the characteristics of the waste, sewage sludge, and other materials, including the source and volume. (1)(2)(9) Verify that access to the facility is controlled. (1)(2)(9) Verify that by-products are stored to prevent vector intrusion and aesthetic degradation. (1)(2)(9) Verify that materials that are not composted are removed periodically. (1)(2)(9) Verify that run-off water that has been in contact with composted waste, materials stored for composting, or residual waste is diverted to a leachate collection system. (1)(2)(9) Verify that the temperature and retention time for material being composted is monitored and recorded. (1)(2)(9) Verify that the compost is analyzed periodically for the following: (1)(2)(9) - percentage of total solids - volatile solids as a percentage of total solids - pH - ammonia - nitrate nitrogen - total phosphorus - cadmium - chromium - copper - lead - nickel - zinc - mercury - polychlorinated biphenyls. Verify that compost is produced by a process that further reduces pathogens. (1)(2)(9) (NOTE: Two acceptable methods of production are windrowing and the enclosed vessel method.) ...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-60. The distribution of compost produced at a composting facility that processes annually 5000 tons of sludge from a domestic wastewater treatment plant, must be done according to the classification of the compost (OEBGD, Chapter 7, Criteria 16).	Determine if the compost of Class A or Class B as follows: (1)(2)(9) - Class A may contain contaminate levels no greater than the levels indicated in milligrams per kilogram (mg/kg) on a dry weight basis: PCB 1 Cadmium 10 Chromium 1000 Copper 500 Lead 500 Mercury 5 Nickel 100 Zinc 1000 - Class B is compost that fails to meet the standards for Class A compost. Verify that compost that is distributed or marketed as commercial fertilizer, speciality fertilizer, soil amendment, or plant amendment is registered with the Executive Agent. (1)(2)(9) Verify that Class A compost: (1)(2)(9) - is stored until the compost is matured (a 60 percent decomposition) - is distributed for unrestricted use. Verify that Class B is only distributed on a restricted basis. (1)(2)(9)
...	...
MEDICAL/ PATHOLOGICAL WASTES	
8-61. Healthcare facility waste handlers are required to receive initial training and annual refresher training in the proper handling and disposal of all wastes (AR 40-5, para 11-7c(1)(c)).	Verify that healthcare facility waste handlers have been trained. (1)(3)
...	...
8-62. All personnel handling infectious medical waste are required to wear protective apparel or equipment (OEBGD, Chapter 8, Criteria 13).	Verify that all personnel handling infectious medical waste wear protective equipment such as gloves, coveralls, masks, and goggles. (1)(3)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
8-63. Infectious and pathological wastes are required to be handled according to specific parameters (OEBGD, Chapter 8, Criteria 1, 2, and 10; AR 40-5, para 11-7c(2) and para 11-7c(3)).	Identify locations at the installation where infectious waste is generated. (1)(3) Verify that infectious medical waste is separated from noninfectious medical waste at the point of origin. (3) Verify that general infectious waste is stored in the area of generation until collected. (1)(3) Verify that containers with lids (as appropriate) and lined with impervious, tear-resistant, and distinctively colored plastic bags are used in the area of generation. (1)(3) Verify that the waste is collected at regular intervals. (1)(3) Verify that infectious waste is not compacted unless it has been converted to noninfectious waste. (1)(3) Verify that containers holding sharps are no compacted. (1)(3) (NOTE: Mixtures of infectious medical wastes and hazardous waste will be handled as infectious hazardous waste and are the responsibility of the generating DOD component, not the Defense Reutilization and Marketing Office (DRMO).) (NOTE: Mixtures of infectious medical wastes and solid wastes will be handled as infectious medical waste.)
...	...
8-64. Infectious medical waste must be segregated, stored, and transported in bags or receptacles that meet specific criteria (OEBGD, Chapter 8, Criteria 6, 7, and 11).	Verify that bags or receptacles are clearly marked with the universal biohazard symbol, the word BIOHAZARD, and markings that identify the generator, date of generation, and contents. (1)(3) Verify that bags or receptacles are durable, a minimum of 3 mils thick, and puncture resistant enough to prevent rupture or leaks during ordinary use. (1)(3)
...	...
8-65. Anatomical pathological waste must be handled according to specific procedures (OEBGD, Chapter 8, Criteria 11).	Verify that bags or receptacles are clearly marked with the universal biohazard symbol, the word BIOHAZARD, and markings that identify the generator, date of generation, and contents. (1)(3) Verify that bags or receptacles are durable, a minimum of 3 mils thick, and puncture resistant enough to prevent rupture or leaks during ordinary use. (1)(3) Verify that anatomical pathological waste is disposed of by incineration or burial. (1)(3)
...	...

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-66. The disposal of infectious and pathological waste must meet specific standards (AR 40-5, para 11-7c(6)(b) and 11-7c(6)(c)).	Verify that infectious waste is incinerated or autoclaved. (1)(3) Verify that pathological waste is incinerated or steam sterilized. (1)(3) Verify that if pathological waste is steam sterilized, it is ground up and flushed into the sanitary sewer or incinerated. (1)(3)
...	...
8-67. The treatment of infectious medical waste must be done according to specific parameters (OEBGD, Chapter 8, Criteria 16).	Verify that infectious medical waste is treated according to the parameters in Appendix 8-1. (1)(3) Verify that sterilizers maintain a temperature of 121 ^{o}1C (250 ^{o}F) for at least 90 min. (1)(3) Verify that the effectiveness of the sterilizers is tested at least weekly using Bacillus stearo thermophilus spore strips or an equivalent biological performance test. (1)(3) Verify that incinerators are designed and operated to maintain a minimum temperature and retention time sufficient to destroy all infectious agents and pathogens. (1)(3) Verify that ash is tested for heavy metals and is disposed of according to test results. (1)(3) Verify that chemical disinfection is done using procedures and compounds approved by DOD medical personnel for use on any pathogen or infectious agent suspected to be present in the waste. (1)(3)
...	...
8-68. Installations that do not treat infectious medical waste on-site must manage it according to specific parameters (OEBGD, Chapter 8, Criteria 14).	Verify that infectious medical waste that is in storage is maintained in a nonputrescent state, using refrigeration if necessary. (1)(3) Verify that storage sites: (1)(3) - are specifically designated - are constructed to prevent entry of insects, rodents, and other pests - prevent access by unauthorized personnel - are marked on the outside with the universal biohazard symbol and the word BIOHAZARD in both English and the language of the host nation.
...	...
8-69. Installations are required to develop contingency plans for the treatment or disposal of infectious medical waste in case the primary means becomes inoperable (OEBGD, Chapter 8, Criteria 17).	Verify that a contingency plan exists and the means to implement the plan are in place. (1)(3)

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COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
8-70. Sharps are required to be disposed of in rigid receptacles, patient accessible sharps containers locked (OEBGD, Chapter 8, Criteria 8).	Verify that sharps are disposed of in rigid containers. (1)(3) Verify that sharps containers that are stored in areas accessible to patients are locked. (1)(3) Verify that needles are not clipped, bent, cut, or recapped prior to disposal. (1)(3)
...	...
8-71. Specimens of blood, blood products, and other liquid infectious wastes are required to be handled according to specific procedures (OEBGD, Chapter 8, Criteria 12).	Verify that bulk blood or blood products are decanted into clinical sinks and that emptied containers are managed as infectious medical wastes. (1)(3) Verify that suction canister waste from operating rooms is either decanted into a clinical sink or sealed into leak-proof containers and incinerated. (1)(3)
...	...
8-72. Contaminated sharps must be discarded immediately in containers meeting specific requirements (AR 40-5, para 11-7c(6)(e)).	Verify that contaminated sharps are placed in containers that are rigid, impervious, and secure. (1)(3) Verify that the containers are labelled to indicate they contain infectious waste consisting of sharps. (1)(3) Verify that when the containers of contaminated sharps are being moved from the area of use, the containers: (1)(3) - are closed - placed in a secondary container if leakage is possible.
...	...
8-73. The transportation of infectious medical waste must be done according to specific parameters (OEBGD, Chapter 8, Criteria 9 and 15).	Verify that infectious medical waste is not placed in chutes or dumbwaiters and is transported in a manner that minimizes human exposure. (1)(3) Verify that prior to being transported off-site, bags of infectious medical waste are placed in rigid or semirigid, leakproof containers. (1)(3)
...	...
8-74. Spills of infectious medical waste are required to be cleaned up as soon as possible and according to specific standards (OEBGD, Chapter 8, Criteria 18).	Verify that personnel wear protective equipment. (1)(3) Verify that blood and body fluids are removed with an absorbent material that is then managed as infectious medical waste. (1)(3) Verify that all surfaces that were in contact with the infectious medical waste are washed with soap and water and chemically decontaminated. (1)(3)

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer (9) Chief of Operations and Maintenance (O&M) (20) Director of Contracting (DOC) (21) Public Affairs Office (PAO)

COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
8-75. Installations are required to keep records on the disposal of infectious medical waste (OEBGD, Chapter 8, Criteria 19).	Verify that records are kept for 3 yr after the date of disposal and include: (1)(3) - type of waste - amount of waste by volume - treatment, if any - disposition, including date of disposition and, if the waste was transferred to host nation facilities, receipts.
...	...
8-76. Radioactive medical waste must be disposed of according to service directives (OEBGD, Chapter 8, Criteria 5).	Determine if the installation disposes of radioactive medical waste. (1)(3) Verify that disposal is done according to Air Force guidance. (1)(3)

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer (9) Chief of Operations and Maintenance (O&M) (20) Director of Contracting (DOC) (21) Public Affairs Office (PAO)

Appendix 8-1

Treatment and Disposal Methods for Infectious Medical Waste

Type of Medical Waste	Method of Treatment	Method of Disposal
Microbiological	Steam sterilization Chemical disinfection Incineration	MSWLF [1]
Pathological	Incineration[2] Cremation	MSWLF Burial Cremation
Bulk blood	See Note 3	Domestic wastewater treatment plant
Suction canister waste		Domestic wastewater treatment plant Incineration
Sharps in sharps containers	Steam sterilization Incineration	MSWLF

[1] See Section 8 for criteria for solid waste landfills.

[2] Placentas may also be ground and discharged to a domestic wastewater treatment plant that complies with the criteria of Chapter 10.

[3] Bulk blood known to be infectious must be treated by incineration or steam sterilization before disposal.

INSTALLATION:	COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT Worldwide ECAS	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer (9) Chief of Operations and Maintenance (O&M) (20) Director of Contracting (DOC) (21) Public Affairs Office (PAO)

Section 9

Special Programs Management

SECTION 9

SPECIAL PROGRAMS MANAGEMENT

A. Applicability of this Protocol

This protocol applies to all military communities. Currently, this section contains protocols for polychlorinated biphenyls (PCBs), asbestos, and radon gas. The Special Program protocol is written in response to regulations that are applicable to the conduct of activities that involve these pollutants.

The Special Program protocol is used to determine the compliance status of the management activities associated with: PCBs and in-service and out-of-service PCB items; identification, management, removal, and disposal of asbestos; and the Army Radon Reduction Program (ARRP).

B. DOD Regulations

- *Overseas Environmental Baseline Guidance Document (OEBGD*, October 1992, Chapter 14 discusses the actions and controls needed to abate threats to human health and the environment from the handling, use, storage, and disposal of PCBs. Chapter 15 addresses similar issues for asbestos while Chapter 16 outlines the criteria for assessing and mitigating radon. Chapter 17 contains procedures for informing decision-makers of environmental consideration when authorizing or approving major DOD actions to be taken.

C. Army Regulations (ARs)

- AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990, requires:

  1. an inventory of PCBs and PCB related items

  2. the development of an asbestos management plan, proper handling of asbestos, and directions to OCONUS commanders to fund field investigations, comply with all applicable host nation requirements, and provide laboratory support as needed (AR 200-1, para 1-24 (4))

  3. the development of a noise complaint procedure and the establishment of the ARRP.

D. Responsibility for Compliance

PCBs

- The Directorate of Engineering and Housing (DEH), through the Exterior Electrical Shop or the Environmental Coordinator (EC) is responsible for identifying, inspecting, marking (labeling), and properly servicing PCB electrical equipment (transformers and capacitors).

- The EC is responsible for ensuring that out-of-service items are located in a technically adequate PCB storage facility. Normally, such facilities are located at the Defense Reutilization and Marketing Office (DRMO) which is responsible for storage, transportation, and contracting for disposal.

Asbestos

- The DEH establishes an installation asbestos management team and appoints an asbestos management control officer or team leader. The DEH maintains records of asbestos survey results, and plans and updates the records as changes occur.

- The Asbestos Management Team prepares the Asbestos Management Plan, which contains documentation of all asbestos management efforts and mechanisms for oversight of the program. The team, as a minimum, consists of representatives from the DEH, the Environmental Office, Preventive Medicine, the Safety Office, the Civilian Personnel Office (CPO), the Staff Judge Advocate (SJA), and the Public Affairs Office (PAO).

Radon

- The DEH is responsible for reviewing radon assessments and for planning, programming, and institutionalizing radon mitigation features for existing and future military community projects.

E. Key Compliance Definitions

These definitions were obtained from the directives/instructions and ARs listed at the end of each definition. If there is no citation listed for the definition, it has been drawn from the U.S. Code of Federal Regulations (CFR).

- *ARRP* - the Army Radon Reduction Program (AR 200-1, para 11-1).

- *Active Waste Disposal Site* - any disposal site other than an inactive site.

- *Adequately Wetted* - sufficiently mixed or penetrated with liquid to prevent the release of particulates.

- *Asbestos* - including chrysotile, amosite, crocidolite, tremolite asbestos, anthrophylite asbestos, actinolite asbestos, and any other of these materials that have been chemically treated and/or altered (OEBGD, Chapter 14, Definitions).

- *Asbestos-containing Material (ACM)* - any material containing more than 1 percent asbestos by weight (OEBGD, Chapter 14, Definitions).

- *Asbestos-containing Waste Materials* - this includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. As applied to demolition and renovation operations, this term also includes regulated asbestos-containing material waste and materials contaminated with asbestos, including disposable equipment and clothing.

- *Capacitor* - a device for accumulating and holding a charge of electricity that consists of conducting surfaces separated by a dielectric.

- *Category I Nonfriable ACM* - asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos.

- *Category II Nonfriable ACM* - any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos.

- *Chemical Waste Landfill* - a landfill where a high level of protection against risk of injury to health or the environment from migration of deposited PCBs to land, water, or the atmosphere is provided by incorporating special methods for locating, engineering, and operating the landfill (OEBGD, Chapter 14, Definitions).

- *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 any facility.

- *Detailed Radon Testing* - a comprehensive testing program of radon (OEBGD, Chapter 16, Definitions).

- *Disposal* - to intentionally or accidentally discard, throw away, or otherwise complete or terminate the useful life of PCBs and PCB Items.

- *Emergency Situations* - a situation that exists for a PCB Transformer when:

  1. neither a non-PCB Transformer nor a non-PCB-contaminated Transformer is currently in storage for reuse or readily available within 24 hours (h) for installation, or
  2. immediate replacement is necessary to continue service for power users.

- *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. The operation is necessary to protect equipment from damage or avoid imposing an unreasonable financial burden. This term includes operations necessitated by nonroutine failures of equipment.

- *Friable Asbestos* - any material containing more than 1 percent asbestos that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure (OEBGD, Chapter 14, Definitions).

- *Glove Bag* - a sealed compartment with attached inner gloves used for handling of ACM.

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

- *High Concentration PCBs* - PCBs that contain 500 parts per million (ppm) or greater PCBs, or those materials that the United States Environmental Protection Agency (USEPA) requires to be assumed to contain 500 ppm or greater PCBs in the absence of testing.

- *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 meters (m) of a nonindustrial, nonsubstation building (OEBGD, Chapter 14, Definitions).

- *Incinerator* - an engineered device using controlled flame combustion to thermally degrade PCBs and PCB Items. Examples include rotary kilns, liquid injection incinerators, cement kilns, and high temperature boilers (OEBGD, Chapter 14, Definitions).

- *Industrial Building* - a building directly used in manufacturing or technically productive enterprises.

- *Initial Radon Screening* - short-term radon testing in a statistically representative sample of selected high priority facilities (family housing, child development centers, schools, dormitories, etc.). The purpose of initial screening is to identify installations having high radon levels (OEBGD, Chapter 16, Definitions).

- *Leak or Leaking* - any instance in which a PCB Article, a PCB container, or PCB Equipment has any PCBs on any portion of its external surface (OEBGD, Chapter 14, Definitions).

- *Low Concentration PCBs* - PCBs that are tested and found to contain less than 500 ppm PCBs or those PCB-containing materials that the USEPA requires to be assumed to be at concentrations below 500 ppm (e.g., untested mineral oil dielectric fluid).

- *Mark* - the descriptive name, instructions, cautions, or other information applied to PCBs, PCB Items, or other objects subject to this document (OEBGD, Chapter 14, Definition).

- *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 these criteria.

- *Mineral Oil PCB Transformers* - any transformer originally designed to contain mineral oil as the dielectric fluid and that has been tested and found to contain 500 ppm or greater PCBs.

- *Mitigation* - actions taken to reduce radon levels in facilities having radon levels higher than 4 picoCuries/liter (pCi/L), as identified during detailed radon testing (OEBGD, Chapter 16, Definitions).

- *Non-PCB Transformers* - any transformer that contains less than 50 ppm PCB (OEBGD, Chapter 14, Definition).

- *Permissible Exposure Limit (PEL)* - an airborne concentration of 0.2 of an asbestos fiber per cubic centimeter (f/cm^3) as an 8-h time-weighted average (OEBGD, Chapter 14, Definitions).

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

- *PCB Article* - any manufactured article, other than a PCB Container, that contains PCBs and whose surface(s) has been in direct contact with PCB. This includes capacitors, transformers, electric motors, pumps, and pipes (OEBGD, Chapter 14, Definition).

- *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 (OEBGD, Chapter 14, Definition).

- *PCB Container* - any package, can, bottle, bag, barrel, drum, tank, or other device that contains PCBs or PCB Articles and whose surface has been in direct contact with PCBs (OEBGD, Chapter 14, Definition).

- *PCB-contaminated Electrical Equipment* - any electrical equipment including, but not limited to, transformers, capacitors, circuit breakers, reclosers, voltage regulators, switches, electromagnets, and cable that contain 50 ppm or greater PCB, but less than 500 ppm PCB (OEBGD, Chapter 14, Definitions).

- *PCB Equipment* - any manufactured item, other than a PCB Container or a PCB Article Container, that contains a PCB Article or other PCB Equipment and includes microwave ovens, electronic equipment, and fluorescent light ballasts and fixtures (OEBGD, Chapter 14, Definitions).

- *PCB Item* - any PCB Article, PCB Article Container, PCB Container, or PCB Equipment, that deliberately or unintentionally contains, or has as a part of it, any PCB or PCBs at a concentration of 50 ppm or greater (OEBGD, Chapter 14, Definitions).

- *PCB Transformer* - any transformer that contains 500 ppm PCB or greater (OEBGD, Chapter 14, Definitions).

LEVELS OF PCB ppm

less than 50 ppm	Non-PCB Transformer
50 ppm - 499 ppm	PCB-contaminated Electrical Equipment
500 ppm or greater	PCB Transformer

- *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.

- *Post Mitigation Monitoring* - follow-up radon testing in facilities where mitigation has been completed. The purpose of post-mitigation monitoring is to ensure that mitigation actions were effective in reducing radon levels below 4 picoCuries /liter (pCi/L) (OEBGD, Chapter 16, Definitions).

- *Radon* - a naturally occurring, odorless, colorless radioactive gas (OEBGD, Chapter 16, Definitions).

- *Regulated Asbestos-containing Material (RACM)* - includes: friable asbestos material; Category I Nonfriable ACM that has become friable; Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading; and Category II nonfriable ACM that has a high probability of becoming crumbled, crushed, or pulverized.

- *Renovation* - altering a facility or one or more facility components in any way, including the stripping or removal of RACM from a facility component. Operations in which load-supporting structural members are wrecked or taken out are demolition.

- *Restricted Access Area* - areas where access by unauthorized personnel is controlled by fences, other man-made structures, or naturally occurring barriers such as mountains, cliffs, or rough terrain (OEBGD, Chapter 14, Definitions).

- *Retrofill* - to remove PCB or PCB contaminated dielectric fluid and replace it with either PCB, PCB-contaminated, or non-PCB dielectric fluid.

- *Rupture of a PCB Transformer* - a violent or nonviolent break in the integrity of a PCB Transformer caused by an over-temperature and/or over-pressure condition that results in the release of PCBs.

- *Strip* - to take off RACM from any part of a facility.

- *Structural Member* - any load-supporting member of a facility, such as beams and load-supporting walls, or any nonload-supporting member, such as ceilings and nonload-supporting walls.

- *Substantial Contact Area* - an area that is subject to public access on a routine basis or that could result in substantial dermal contact by employees (OEBGD, Chapter 14, Definitions).

- *Visible Emissions* - any emissions that are visually detectable without the aid of instruments, that come from RACM or asbestos-containing waste materials or from any asbestos milling, manufacturing, or fabricating operations. This does not include condensed water vapor.

SPECIAL PROGRAMS MANAGEMENT

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All Installations with PCBs	9-1 through 9-4	(1)(2)
B records	9-5 through 9-7	(1)(2)
PCB transformers	9-8 through 9-16	(1)(2)
Other PCB items		
General	9-17 through 9-19	(1)(2)
Spills	9-20 through 9-22	(1)(2)
PCB storage	9-23 through 9-27	(1)(2)
PCB disposal	9-28 through 9-40	(1)(2)(3)
Asbestos Management		
General	9-41 through 9-45	(1)(2)(3)
Personal safety	9-46 through 9-48	(1)(2)(3)
Renovation and demolition	9-49 through 9-54	(1)(2)(3)
Asbestos disposal	9-55 through 9-58	(1)(2)(3)
Asbestos in schools	9-59	(1)(2)(3)
Radon Management	9-60 through 9-73	(1)(2)(3)

(a)CONTACT/LOCATION CODE:

(1) Directorate of Engineeringing and Housing (DEH)
(2) Environmental Coordinator (EC)
(3) Preventive Medicine Officer

PCB MANAGEMENT

Records to Review

- Inspection, storage, maintenance, and disposal records for PCBs/PCB Items
- PCB Equipment inventory and sampling results
- Correspondence with regulatory agencies concerning PCB noncompliance situations
- Annual reports

Physical Features to Inspect

- PCB storage areas
- Equipment, fluids, and other items, used or stored at the facility, that contain PCBs

People to Interview

- Directorate of Engineering and Housing (DEH)
- Environmental Coordinator (EC)
- Preventive Medicine Officer

ASBESTOS MANAGEMENT PROGRAM

Records to Review

- Installation asbestos management plan and operating plan
- Notifications to regulators concerning asbestos disposal
- Records of on-site disposal and transportation, and off-site disposal of asbestos
- Regulatory inspection reports
- Documentation of asbestos sampling and analytical results
- Documentation of preventive measure or action
- Results of air sampling at the conclusion of response action
- Records of asbestos training program
- List of buildings insulated with asbestos or housing asbestos-containing materials
- Record of demolition or renovation projects completed in the past 5 years (yr) that involve friable asbestos
- Decision documents/records of decision
- Administrative records

Physical Features to Inspect:

- Pipe, spray-on, duct, and troweled cementitious insulation and boiler lagging
- Ceiling and floor tiles
- Asbestos insulation in equipment (exhaust systems, generators, vehicles, aircraft, etc.)
- Maintenance shops (brake shoes, clutch plates)

People to Interview

- Directorate of Engineering and Housing (DEH)
- Environmental Coordinator (EC)
- Preventive Medicine Officer

RADON PROGRAM

Records to Review

- Annual reports
- Inventory sheets for detector placement

People to Interview

- Directorate of Engineering and Housing (DEH)
- Environmental Coordinator (EC)
- Preventive Medicine Officer

COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL INSTALLATIONS	
9-1. Determine actions or changes since previous review of PCB management, asbestos management and radon management (GMP).	Check if facility changes relative to PCB Equipment have occurred since previous review that would affect the scope of the review. (1) Determine if there has been renovation and demolition projects that have occurred since previous review of asbestos management. (1) Determine facility changes relative to radon gas monitoring that have occurred since previous review and would affect the scope of the current review. Examples of changes are: (1)(2) - new construction - additions to existing buildings - changes in building use.
...	...
9-2. Copies of all relevant DOD directive/ instruction, ARs, and guidance documents on PCB management, asbestos management, and radon management should be maintained at the installation (GMP).	Determine if copies of the following are maintained on the installations: (1)(2) - *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992. - AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990. - AR 200-2, *Environmental Effects of Army Actions*, 23 December 1988. - AR 385-10, *The Army Safety Program*, 23 June 188. - AR 405-90, *Disposal of Real Estate*, 10 May 1985. - TB MED 502, *Occupational and Environmental Health: Respiratory Protection Program.* - TB MED 513, *Occupational and Environmental Health Guidelines for the Evaluation and Control of Asbestos Exposure.* - Spill Prevention Control and Countermeasure Plan (SPCC). - Installation Spill Cleanup Plan (ISCP).
...	...
9-3. Installations are required to comply with Major Army Command (MACOM) regulations and substantive host nation regulations concerning PCB management, asbestos management, and radon management (AR 200-1, para 1-40).	Verify that the installation is complying with MACOM and host nation requirements. (1) (NOTE: Issues that are typically regulated by the MACOM and host nation agencies include: - definitions of *PCB-contaminated* - PCB storage, labeling, and disposal requirements - certification of individuals sampling and/or working with asbestos - asbestos renovation and demolition procedures - asbestos handling and disposal procedures.)
...	...

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer

COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-4. PCB Items (any PCB Article, PCB Article Container, PCB Container, or PCB Equipment with PCB concentration of 50 ppm or greater) and rooms, vaults, or storage rooms containing PCB Items are required to be marked in English and the host nation language (OEBGD, Chapter 14, Criteria 3).	Verify that PCB Items and storage rooms or vaults are marked so that they are identified as containing PCBs, there is a warning against improper handling and disposal, and there is a phone number provided in case of spills. (1)(2)
...	...
PCB RECORDS	

9-5. A written annual document log must be prepared by 1 July of each calendar year, covering the previous year for all installations that use or store at any time at least 45 kilograms (kg), or 99.4 pounds (lb), of PCBs contained in PCB Containers, PCB Transformers of 50 ppm, or one or more PCB Large Capacitors of High- or Low-Voltage (AR 200-1, para 5-6b).	Verify that the annual document log and annual records (manifests, certificates of disposal) are kept for at least 5 yr after the facility stops using or storing PCBs and PCB Items in the listed quantities. (1)(2)
	
	Review the written annual document log for the following: (1)(2)
	
	- 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 Capacitors of High- and Low-Voltage and the total weight of PCBs in PCB Transformers
	- a record of each telephone call or other form of verification to confirm the receipt of PCB Waste transported by independent transport.

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer

COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

9-5. (continued)	Verify that the annual document log contains the following for each manifest, for each unmanifested waste, and for any PCBs or PCB Items received from or shipped from another facility owned or operated by the generator: (1)(2)
	
	- date removed from service for disposal (first date material placed in PCB Container)
	- date placed into transport for off-site storage/disposal
	- date of disposal (if known)
	- weight of PCB Wastes
	  - total bulk PCB Wastes
	  - total in each article: PCB Transformers or Capacitors
	  - total in each container: 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 of PCB Containers and Article Containers.
	
	Review the annual record and determine if the following information is provided: (1)(2)
	
	- all signed manifests generated or received at the facility during the calendar year
	- all certificates of disposal that have been generated or received during the calendar year.

...	...
9-6. Installations with PCB Items are required to maintain a written inventory of the PCB Items (OEBGD, Chapter 14, Criteria 4).	Verify that the inventory contains a current list, by type, of all PCB items in use, placed into storage for disposal, or disposed of for that year. (1)(2)
...	...
9-7. Records of inspections and maintenance are required to be maintained for 3 yr after disposal of a transformer (OEBGD, Chapter 14, Criteria 6).	Verify that records of inspections and maintenance are on file for at least 3 yr after the disposal of a transformer. (1)
...	...

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer

COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
PCB TRANSFORMERS	
9-8. PCB Transformers with PCBs of concentration of 500 ppm or greater that are in use or in storage for reuse must not pose an exposure risk to food and feed (OEBGD, Chapter 14, Section 2, Criteria 1).	Review PCB inventory for any PCB Transformers (500 ppm or greater) on the installation, that are in use or in storage for reuse and that pose an exposure risk to food and feed. (1)(2)
...	...
9-9. PCB Transformers of 500 ppm PCB or greater that are used in or near commercial buildings or located in sidewalk vaults are required to be equipped with electrical protection (OEBGD, Chapter 14, Section 2, Criteria 3).	Verify that PCB Transformers that are used in or near commercial buildings or located in sidewalk vaults have electrical protection to minimize transformer failure that would result in the release of PCBs. (1)(2)
...	...
9-10. PCB Transformers of greater than 500 ppm PCB are required to be registered with the fire department (OEBGD, Chapter 14, Section 2, Criteria 2).	Verify that all PCB Transformers with PCB concentrations greater than 550 ppm, including those in storage for reuse, are registered with the post fire department, or the fire department with jurisdiction and with the following information: (1)(2) - physical location of PCB Transformer(s) - principle constituent of dielectric fluid (i.e., PCBs, mineral oil, silicone oil, etc.) - name and telephone number of contact person knowledgeable of PCB Transformer(s).
...	...
9-11. Combustible materials, including, but not limited to, paints, solvents, plastics, paper, and swan wood, should not be stored near a PCB Transformer (GMP).	Verify that all combustible materials have been removed from the area within a PCB transformer enclosure (i.e., vault or partitioned area) and the area within 5 m of a PCB transformer or PCB transformer enclosure. (1)(2)
...	...

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer

COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-12. PCB Transformers with PCB concentrations of 500 ppm or greater are required to be properly serviced (OEBGD, Chapter 14, Section 2, Criteria 5).	Interview people performing transformer servicing and determine if servicing activities are properly conducted as follows: (1)(2) - transformers classified as PCB-contaminated Electrical Equipment are only serviced with dielectric fluid containing less than 500 ppm PCB - the transformer coil is not removed during servicing - PCBs removed during servicing are captured and either reused or disposed of properly - the PCBs from a PCB Transformer are not mixed with or added to dielectric fluid from PCB-contaminated Electrical Equipment - dielectric fluids containing less than 500 ppm that are mixed with fluids containing 500 ppm or greater are not used as dielectric fluid in any electrical equipment - dielectric fluids containing 500 ppm or greater are not used as dielectric fluid in any transformers classified as PCB-contaminated electrical equipment. (NOTE: PCB transformers may be serviced with dielectric fluid at any concentration.)
...	...
9-13. Inspections must be performed once every 3 months (mo) for all in-service PCB Transformers of greater than 500 ppm PCB (OEBGD, Chapter 14, Section 2, Criteria 6).	Review inspection records to verify that applicable transformers are inspected at least once every 3 mo. (1)(2) Determine if any PCB Transformers have been leaking. (1)(2) Verify that if any leaking transformers have been discovered, proper reporting procedures have been followed. (1)(2) Verify that the following information is recorded for each PCB Transformer inspection: (2) - 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 of any leaks - data and description of any cleanup, containment, or repair performed - results of any daily inspections of transformers with uncorrected active leaks.

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer

COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-13. (continued)	(NOTE: Reduced visual inspection of at least once every 12 mo is allowed for PCB Transformers with impervious, undrained secondary containment capacities of 100 percent of dielectric fluid and for PCB Transformers tested and found to contain less than 60,000 ppm PCBs.) (NOTE: Increased visual inspection of once a week is 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. (1)(2)
...	...
9-14. PCB Transformers with concentrations of PCB greater than 500 ppm found to be leaking during an inspection are required to be repaired or replaced within 48 h or as soon as possible (OEBGD, Chapter 14, Section 1, Criteria 7 and Section 2, Criteria 8).	Determine if cleanup and/or containment of released PCBs has been initiated within 48 h of its detection or as soon as possible. (1)(2) Determine if plans exist to repair or replace transformers to eliminate the source of the leak. (2)
...	...
9-15. PCB Transformers with PCB concentrations of 500 ppm or greater that have been removed and stored for reuse can only be returned to their original application and location if there is no practical alternative (OEBGD, Chapter 14, Section 2, Criteria 4).	Verify that PCB Transformers are returned to their original application and location unless there is no practical alternative. (2) (NOTE: Alternative used must not exceed 1 yr.)
...	...
9-16. If a PCB Transformer with PCB concentrations equal to or greater than 500 ppm is in a fire, specific actions must be taken (OEBGD, Chapter 14, Section 2, Criteria 7).	Verify that measures are taken to control water runoff if the PCB Transformer were in a fire and subjected to sufficient heat and/or pressure that might result in violent or nonviolent rupture. (2) Verify that water runoff is treated and tested if required. (2)
...	...

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer

COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
OTHER PCB ITEMS	
General	
9-17. Electromagnets, switches, and voltage regulators may contain PCBs at any concentrations if certain requirements are met (OEBGD, Chapter 14, Section 3, Criteria 1).	Verify that electromagnets, switches, and voltage regulators that contain greater than 500 ppm PCB are not rebuilt and no removal or reworking of internal components is done during servicing. (2) 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 has less than 500 ppm PCB. (2) Verify that removed or captured PCBs are either reused as dielectric fluid or disposed of properly. (2) Verify that dielectric fluid containing a mixture of fluids with more than 500 ppm PCB is not used as dielectric fluid in any electrical equipment. (2) Verify that PCBs from electromagnets, switches, and voltage regulators with a PCB concentration of at least 500 ppm is not mixed with or added to dielectric fluid from PCB-contaminated electrical equipment. (2)
...	...
9-18. Capacitors may contain PCBs at any concentration, subject to certain requirements (OEBGD, Chapter 14, Section 3, Criteria 2).	Verify that all PCB Large Capacitors of High- and Low-Voltage that pose an exposure risk to food and feed have been removed. (1)(2) Verify that all PCB Large Capacitors of High- and Low-Voltage are in use only in restricted-access electrical substations or in a contained, restricted-access indoor area. (1)(2)
...	...
9-19. When PCB Items are removed from service, they are required to be marked with the removal date (OEBGD, Chapter 14, Section 3, Criteria 3).	Determine if there are any PCB Items in storage that have been removed from service. (1)(2) Verify that they are marked with the date of removal from service. (1)(2)
...	...
PCB spills	
9-20. The installation spill contingency plan is required to address PCB Items, including temporary storage items (OEBGD Chapter 14, Criteria 1).	Determine if the installation has any PCB Items. (1)(2) Verify that all PCB Items are addressed in the spill contingency plan (see Section 7, *POL Management*, for details on the actual contents of the plan). (1)(2)

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-21. Spills of PCB liquids at concentrations of 50 ppm or greater must be responded to immediately and cleaned up according to specific stan- dards (OEBGD, Chapter 14, Criteria 2).	Verify that surfaces that are located in substantial contact areas are cleaned to 10 micrograms (µg) per 100 square centimeters (cm^2). (1)(2) Verify that surfaces in all other contact areas are cleaned to 100 (µ) per 100 cm^2. (1)(2) Verify that contaminated soil located in restricted access areas is removed until the soil tests no higher than 25 ppm PCB and the area is then backfilled with clean soil containing less than 1 ppm PCB. (1)(2) Verify that contaminated soil located in unrestricted access areas is removed to a minimum depth of 10 inches (in.) or until the soil tests no higher than 10 ppm PCB, whichever is deeper, and is then backfilled with clean soil containing less than 1 ppm PCB. (1)(2)
...	...
9-22. Cleanup of high-concentration spills and low-concentration spills involving 0.5 kg, or 1 pound (lb) or more of PCB by weight (1026 liters (L), or 270 gallons (gal), or more of untested mineral oil) should be done according to specific requirements (GMP).	Verify that the following actions are taken within 24 h (or within 48 h for a PCB Transformer with PCB concentrations of greater than 500 ppm) of discovering the spill: (1)(2) - the area of the spill is cordoned off or otherwise identified to include the area with visible traces of the spill and a 61 cm, or 2-ft, buffer zone (If there are no visible traces, the area of the spill may be estimated.) - clearly visible signs are placed advising people 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: (1)(2) - contaminated solid surfaces are cleaned to a PCB concentration of 100 µg/cm^2 (as measured by standard wipe tests) - soil contaminated by the spill is cleaned to either 25 ppm PCB by weight or 50 ppm PCB by choice of the installation if notice is placed in the area to indicate 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: (1)(2) - high-contact solid surfaces are cleaned to 10 µg per 100 cm^2 (as measured by standard wipe tests) - low-contact, indoor, impervious solid surfaces are decontaminated to 10 µg per 100 cm^2 - low-contact, indoor, nonimpervious surfaces are cleaned to either 10 µg or 100 µg per 100 cm^2 and encapsulated at the option of the installation - low-contact, outdoor surfaces (both impervious and nonimpervious are cleaned to 100 µg per 100 cm^2 - soil contaminated by the spill is cleaned to 25 ppm PCB by weight - post-cleanup sampling is done.

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-22. (continued)	Verify that spills in nonrestricted access locations are decontaminated as follows: (1)(2) - 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 µg per 100 cm^2 (as measured by standard wipe tests) - indoor vault areas and low-contact, outdoor, impervious solid surfaces are decontaminated to 10 µg per 100 cm^2 - at the option of the installation, low-contact, outdoor, nonimpervious solid surfaces are cleaned to either 10 or 100 µg per 100 cm^2 and encapsulated .ip soil is decontaminated to 10 ppm PCB by weight provided that the soil is excavated to a minimum depth of 25 cm, or 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. (1)(2) (NOTE: The occurrence/discovery of the spill on the weekend or the costs of overtime 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.)
...	...
PCB STORAGE	
9-23. PCBs and PCB Items at concentrations greater than 50 ppm that are to be stored before disposal must be stored in a facility that will assure the containment of PCBs (OEBGD, Chapter 14, Section 4, Criteria 1).	Inspect the PCB storage area and verify that the following provisions are present: (1)(2) - the roof and walls of the building in which the PCBs are stored is constructed so as to prevent rainfall from contacting PCBs and PCB Items - a 15 cm, or 6-inch-tall containment curb circumscribing the entire area in which any PCBs or PCB Items are stored. Such curbing shall effectively provide containment for twice the internal volume of the largest PCB Article or 25 percent of the total internal volume of all PCB Articles or Containers stored, 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 be present - floors and curbing are constructed of continuous, smooth, and impervious material - to the maximum extent possible, new storage areas are located to minimize the risk of release because of seismic activity, floods, or other natural events.
...	...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-24. PCB Items may also be stored in other areas that do not comply with the storage area requirements when such storage is for a period of less than 30 days and when any such PCB Items are marked with the date of removal from service (OEBGD, Chapter 14, Section 4, Criteria 2). ...	Inspect area used as a 30-day storage area, and verify that only the following items are stored and that they are properly marked: (2) - 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 in which liquid PCBs at a concentration between 50 and 500 ppm have been placed when containers are marked to indicate 500 ppm or less PCB. Verify that the area has been included in the installation Spill, Prevention, Control, and Countermeasure (SPCC) Plan, and the Installation Spill Cleanup Plan (ISCP). (1)(2) ...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-25. Nonleaking and structurally undamaged PCB Large, High-Voltage Capacitors and PCB-contaminated Electric Equipment that have not been drained of free-flowing dielectric fluid may be stored on pallets next to a storage area that meets specific storage area requirements (OEBGD, Chapter 14, Section 4, Criteria 3).	Verify that capacitors and equipment stored outside the storage facility are on pallets and inspected at least weekly. (2)
...	...
9-26. PCB storage areas are required to be inspected at least monthly (OEBGD, Chapter 14, Section 4, Criteria 4).	Verify that storage areas are inspected monthly. (2)
...	...
9-27. Containers used for the storage of PCBs are required to be as secure as those conforming with the Defense Traffic Management Regulations (OEBGD, Chapter 14, Section 4, Criteria 5).	Verify that containers used for the storage of PCBs are secure. (2)
...	...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
PCB DISPOSAL	
9-28. DOD-generated PCBs manufactured in the United States are required to be returned to the Continental United States (CONUS) for delivery to a permitted disposal facility if host country or third country disposal is not possible, is prohibited, or will not be managed in an environmentally sound manner (OEBGD, Chapter 14, Section 5, Criteria 14).	Determine how the installation is disposing of PCBs. (2)
...	...
9-29. Installations that generate PCB waste of 50 ppm or greater PCB are required to maintain an audit trail for the waste (OEBGD, Chapter 14, Section 5, Criteria 1).	Verify that an audit trail, similar to the audit trail required for hazardous waste, is maintained. (2)
...	...
9-30. Disposal of PCB Items must only be through the DRMO (OEBGD, Chapter 14, Criteria 5).	Verify that all PCB Items have been disposed of through the DRMO. (2)
...	...
9-31. PCB-contaminated liquids are required to be disposed of according to specific parameters (OEBGD, Chapter 14, Section 5, Criteria 2 and 3).	Verify that PCB-contaminated dielectric fluids with concentrations of greater than 500 ppm are disposed of in an incinerator with 99.9 percent combustion efficiency. (2) Verify that PCB-contaminated dielectric fluids with concentrations of 50 ppm to 500 ppm are only disposed of in one of the following ways: (2) - in an incinerator with 99.9 percent combustion efficiency - in a high efficiency boiler that is rated at a minimum of 50 Million British thermal units (MBtu) and fueled by natural gas, oil, or coal.
...	...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-32. PCB-contaminated Electrical Equipment, except capacitors, must have the free-flowing liquid drained off prior to disposal (OEBGD, Chapter 14, Section 5, Criteria 8).	Verify that the free-flowing liquid is drained from electrical equipment prior to disposal as a municipal solid waste. (1)(2)
...	...
9-33. Rags, soils, and other debris contaminated with PCBs at concentrations greater than 50 ppm must be disposed of in a PCB incinerator or in a chemical waste landfill (OEBGD, Chapter 14, Section 5, Criteria 4).	Determine if any contaminated soil or debris has been disposed of. (2)(3) Verify that disposal was conducted at a properly licensed facility. (2)(3)
...	...
9-34. PCB Transformers must be disposed of in either an incinerator with 99.9 percent combustion efficiency or a chemical waste landfill (OEBGD, Chapter 14, Section 5, Criteria 5).	Determine if the PCB Transformers are being disposed of at an approved incinerator or a chemical waste landfill. (1)(2) Verify that if disposal is being done at a chemical waste landfill, the transformer is drained of all free-flowing liquids. (1)(2)
...	...
9-35. PCB Capacitors must be disposed of in accordance with certain requirements (OEBGD, Chapter 14, Section 5, Criteria 6).	Verify that disposal of PCB Capacitors was done in the following ways: (1)(2)(3) - PCB Small Capacitors (less than 3 lb of PCBs) disposed of in a solid waste landfill - PCB Large Capacitors of High- or Low-Voltage (greater than 1.4 kg, or 3 lb of PCBs), containing more than 500 ppm, incinerated in an incinerator with 99.9 percent combustion efficiency.
...	...
9-36. PCB hydraulic machines containing PCBs at concentrations greater than 50 ppm may be disposed of as municipal solid waste if specific conditions are met (OEBGD, Chapter 14, Section 5, Criteria 7).	Verify that the machines are drained of all free-flowing liquid. (1)(2) Verify that if the machine contained PCB liquid of 1000 ppm PCB or greater, it was flushed prior to disposal with a solvent containing less than 50 ppm PCB. (1)(2)(3)

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-37. PCB Articles must be disposed of properly (OEBGD, Chapter 14, Section 5, Criteria 9).	Verify that PCB Articles with concentrations at 500 ppm or greater are disposed of in either: (1)(2)(3) - an incinerator with 99.9 percent combustion efficiency - 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. (1)(2)(3)
...	...
9-38. PCB Containers must be disposed of properly (OEBGD, Chapter 14, Section 5, Criteria 10 and 13).	Verify that PCB Containers with concentrations of 500 ppm or greater are disposed of in one of the following ways: (1)(2)(3) - in a incinerator with 99.9 percent combustion efficiency - in a chemical waste landfill if first the container is drained of any liquid PCBs. Verify that PCB Containers with PCBs at concentrations less than 500 ppm are disposed of in a municipal solid waste landfill after being drained of all free-flowing liquid. (1)(2)(3)
...	...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-39. When PCB fluids, Items, or Articles are disposed of in a high temperature boiler, specific procedures must be followed (OEBGD, Chapter 14, Section 5, Criteria 11).	Verify that the boiler is rated at a minimum of 50 MBtu/h. (1)(2)(3) Verify that if the boiler used natural gas or oil as the primary fuel, the carbon monoxide concentration in the stack is 50 ppm or less and the excess oxygen is at least 3 percent when PCBs are being burned. (1)(2)(3) Verify that if the boiler uses coal as the primary fuel, the carbon monoxide concentration in the stack is 100 ppm or less and the excess oxygen is at least 3 percent when PCBs are being burned. (1)(2) Verify that the mineral oil dielectric fluid: (1)(2) - does not comprise more than 10 percent by volume of the total fuel feed rate - is not fed into the boiler unless the boiler is operating at its normal operating temperature, including during either start-up or shut-down operations. Verify that the performance of the boiler is continuously monitored for carbon monoxide and excess oxygen percentage in the stack gas while burning mineral oil dielectric fluid. (1)(2) (NOTE: If the boiler is burning less than 112,500 L, or 30,000 gal, of mineral oil dielectric fluid per year, monitoring is required at least every 60 minutes (min).) Verify that the primary fuel feed rates, mineral oil dielectric fluid feed rates, and the total quantities of both primary fuel and mineral oil dielectric fluid fed to the boiler are measured and recorded at least every 15 min. (1)(2) Verify that the flow of mineral oil is stopped if the carbon monoxide or excess oxygen limitations are exceeded. (1)(2)
...	...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-40. When PCB fluids, items, or articles are disposed of in an incinerator, specific procedures must be followed (OEBGD, Chapter 14, Section 5, Criteria 12).	Verify that the combustion criteria require maintenance of the introduced liquids for a 2 second (s) dwell time at 1200 ^{0}C, plus or minus 100 ^{0}C, and 3 percent excess oxygen in the stack gas or maintenance of the introduced liquids for a 1.5 s dwell time at 1600 ^{0}C, plus or minus 100 ^{0}C, and 2 percent excess oxygen in the stack gas. (1)(2) Verify that combustion efficiency is maintained at 99.9 percent. (1)(2) Verify that the rate and quantity of PCBs that are fed to the combustion system are measured and recorded at regular intervals of not more than 15 min. (1)(2) Verify that the temperature of the incineration process is continuously measured and recorded. (1)(2) Verify that the flow of PCBs to the incinerator stops automatically if temperature criteria are not met. (1)(2) Verify that during incineration of PCBs, continuous monitoring is done for oxygen and carbon monoxide and periodic monitoring is done for carbon dioxide. (1)(2)
...	...
ASBESTOS MANAGEMENT **General**	
9-41. Installations are required to appoint an asbestos program manager (OEBGD, Chapter 15, Criteria 1).	Verify that the installation has an asbestos program manager. (1)(2)
...	...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-42. Installations must complete a survey of all structures by 23 May 1991 (AR 200-1, para 10-2j, para 10-3b(1-3).	Verify that the survey was completed by 23 May 1991. (1)(2)(3) Verify that the survey(s) was completed by accredited personnel who meet the inspector training requirements of Asbestos Hazard Emergency Response Act (AHERA), and applicable Federal, state, and local requirements. (1)(2) Verify that personnel were supervised by a qualified industrial hygienist or other qualified environmental professional who meets the requirements of "competent person" as specified in 29 CFR 1926.58(b). (1)(2) Determine if the survey is prioritized as follows: (1)(2) - buildings in aging or deteriorated condition that present significant exposure potential - structures that are occupied or likely to be occupied - structures to be repaired, altered, or demolished - Department of the Army (DA)-controlled schools or child development centers - hospitals - residential housing. Verify that annual followup inspections are being done by accredited personnel to identify and report damage and deterioration of asbestos. (1)(2)(3)
...	...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-43. Installations are required to prepare, coordinate, and execute an Installation Asbestos Management Plan (OEBGD, Chapter 15, Criteria 2; AR 200-1, para 10-3).	Verify that an Installation Asbestos Management Plan has been prepared. (1)(2) Examine a copy of the plan for the following information: (1)(2) - a notification and education program to tell workers, tenants, and building occupants where ACM is located and why to avoid disturbing it - a complete list of operations and maintenance schedules, design plans, and specifications that identify structures scheduled for repair, alteration, and demolition - an installation-wide survey of all structures to determine the location, extent, and condition of all asbestos - documentation of the presence, extent, and condition of asbestos and assessment criteria - an assessment, for each asbestos occurrence, of the potential for environmental release and risks to human health and the environment that was conducted by personnel who meet the management planner training requirements of AHERA and other applicable Federal, state, and local requirements - preparation, coordination, and immediate implementation of abatement plans to minimize potential for asbestos exposure for each area where it exists - preparation, coordination, and immediate implementation of a special Operations and Maintenance (O&M) plan for each occurrence of asbestos to monitor the condition of asbestos and minimize releases and human exposure - provision for worker education/training programs - medical and respiratory programs as applicable - an environmental impact analysis of the Installation Asbestos Management Plan (as required by AR 200-2). (NOTE: Asbestos Management Plans may be incorporated into existing environmental management documents.)
...	...
9-44. Asbestos-related actions that have potential to generate fugitive asbestos emissions must be environmentally assessed as specified in AR 200-2 (AR 200-1, para 10-4d).	Verify that the installation's asbestos management plans and asbestos-related actions that could produce fugitive asbestos emissions are environmentally assessed as specified in AR 200-2. (1)(2)(3) Verify that if the environmental assessment results in a Finding of No Significant Impact (FNSI), such a finding is published throughout the affected geographic area. (1)(2)
...	...
9-45. Friable materials that have the potential to be contaminated with asbestos should be tested (GMP).	Examine the facility for friable insulation, roofing, and flooring. (1)(2) Verify that friable materials with the potential for asbestos contamination are tested when located in areas of worker exposure. (1)(2)
...	...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Personal Safety	
9-46. Installations are required to provide personnel working with asbestos with proper education, training, and necessary protective equipment (AR 200-1, para 10-2f, para 10-2i, and para 10-2q).	Verify that workers are provided with appropriate training and personal protective equipment as specified in AR 385-10, TB MED 502, 29 CFR 1910.1001, and 29 CFR 1926.59. (1)(2)(3) Verify that a procedure exists to notify individuals occupationally exposed to asbestos. (1)(2)(3)
...	...
9-47. Employees working with asbestos are required to have physical examinations (TB MED 513).	Verify that all employees working with asbestos are given physical examinations as required by TB MED 513: (2)(3) - before beginning work with asbestos - annually while employed - at termination of employment.
...	...
9-48. The installation must not expose employees, visitors, or contractors to airborne asbestos above the PEL without personal protective equipment (OEBGD, Chapter 15, Criteria 3).	Verify that individuals are not exposed to airborne asbestos above the PEL. (2)(3)
...	...
RENOVATION AND DEMOLITION	
9-49. Prior to renovation or demolition the installation is required to determine if ACM will be removed or disturbed and record the determination in the project authorization document (work order) (OEBGD, Chapter 15, Criteria 4).	Verify that facilities are surveyed for ACM prior to renovation and/or demolition and that the determination of action is noted on the work order. (1)
...	...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-50. When the installation is going to be removing or disturbing friable ACM, a written assessment of the action must be prepared and furnished to the Installation Commander (IC) (OEBGD, Chapter 15, Criteria 5).	Determine if there has been a recent removal of friable ACM. (1) Verify that a written assessment was produced. (1) Verify that a copy of the written assessment is kept on permanent file. (1)
...	...
9-51. Installations are required to remove ACM when it poses a threat to release airborne asbestos fibers and cannot be reliably repaired or isolated (OEBGD, Chapter 15, Criteria 6).	Verify that known asbestos that poses a threat has been removed. (1)(2)(3)
...	...
9-52. Installations are required to remove ACM that is friable or ACM that has a high degree of probability of becoming friable during demolition (OEBGD, Chapter 15, Criteria 7).	Verify that friable or potentially friable ACM is removed as necessary. (1)(3)
...	...
9-53. When a facility is demolished by intentional burning, all RACM should be removed (GMP).	Verify that RACM is removed before a facility is burned. (1)(3)
...	...
9-54. Installations are required to meet specific criteria before and during the removal of asbestos (OEBGD, Chapter 15, Criteria 8).	Verify that prior to removal, all workers are trained. (1)(3) Verify that monitoring programs are in place during asbestos removal to document exposure levels. (1)(3) Verify that all workers involved in the removal use properly fitted respiratory protection and personal protection equipment. (1)(3) Verify that appropriate engineering controls and work practices are used to contain and control asbestos fiber releases for all asbestos removal that has the potential to release airborne asbestos fibers greater than the PEL. (1)(3)

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ASBESTOS DISPOSAL	
9-55. Asbestos-containing waste materials must be disposed of according to specific standards (OEBGD, Chapter 15, Criteria 9).	Verify that all ACM waste is wetted, sealed in a leak-proof container, and properly disposed of in a municipal solid waste landfill. (1)(3) Verify that containers are labeled DANGER, CONTAINS ASBESTOS FIBERS - AVOID CREATING DUST - CANCER AND LUNG DISEASE HAZARD in English and the host nation language. (1)(3) Verify that permanent records are maintained, documenting the disposal action and site. (1)(3)
...	...
9-56. Active waste disposal sites where ACM is being disposed of should meet specific standards (GMP).	Determine if the installation is operating a landfill where asbestos is being disposed of. (1) Verify that there are no visible emissions from active asbestos-containing waste disposal sites, or that: (1)(2)(3) - 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 nonasbestos-containing material, or - a resinous or petroleum based dust suppression agent is applied (waste crank case oil is not suitable for this purpose), or - an approved alternative method of control is used. Verify that unless a natural barrier exists deterring access by the general public, either the waste is properly covered daily by nonasbestos-containing material or proper warning signs and fences are installed and maintained as follows: (1)(2)(3) - warning signs are displayed at all entrances at intervals of 100 m (330 ft) or less along the property line of the site or the perimeter of the section of the site where ACMs are disposed of and the signs state that the site contains asbestos and warn against creating dust - the area is adequately fenced. 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. (1)(3)
...	...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-57. Inactive waste disposal sites should meet specific standards (GMP).	Verify that inactive waste disposal sites meet one of the following: (1)(3) - no visible emissions are discharged - asbestos-containing waste material is covered with at least 15 cm (6 in.) of compacted nonasbestos-containing material, and a vegetation cover is grown and maintained. (In desert areas where vegetation is difficult to maintain at least 8 cm (3 in.) of additional well-graded, nonasbestos-containing, crushed rock may be used instead.) - the asbestos-containing waste material is covered with at least 60 cm (2 ft) of nonasbestos-containing material, and the cover is maintained to prevent exposure. Verify that unless a natural barrier exists, warning signs and a fence are installed to deter public access. (1)(3) 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. (1)(3) 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. (1)(2)
...	...
9-58. Real property that contains ACM must be disposed of properly (AR 200-1, para 10-2n and para 10-2o).	Verify that all excess real property containing asbestos is disposed of in accordance with AR 405-90. (1)(2)(3)
...	...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ASBESTOS IN SCHOOLS **9-59.** Installations with primary or secondary schools or child development centers must adhere to the Asbestos-in-Schools Rule (OEBGD, Chapter 15, Criteria 10; AR 200-1, para 10-2e). ...	Determine if friable and nonfriable ACM have been identified in elementary and secondary schools. (1)(2)(3) Verify that all suspect materials that are not confirmed to be ACM have been sampled. (1)(2)(3) Verify that an accredited DOD inspector has provided a written analysis of all friable, known or assumed ACM in school buildings. (1)(2)(3) Verify that appropriate response actions are selected and implemented in a timely manner to protect human health and the environment. (1)(2)(3) Verify that all school employees, organized parent groups, and parents have been informed of the location of friable ACM. (1)(2)(3) Verify that all maintenance and custodial workers who may work in a building containing ACM receive awareness training. (1)(2)(3) Verify that each school has an asbestos management plan that includes all leased or owned facilities. (1)(2)(3) ...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
RADON MANAGEMENT	
9-60. All Army installations are required to perform radon measurements according to a prescribed, prioritized schedule in order to identify Army structures with radon levels above 4 pCi/L, with emphasis on identifying Priority 1 structures with levels greater than 20 pCi (OEBGD, Chapter 16, Criteria 1 and 2; AR 200-1, para 11-2a(3) and 11-4).	Verify that scheduled radon measurements have been performed as follows: (1)(2) - Priority 1: day care centers, hospitals, schools, military family housing, unaccompanied officers/enlisted quarters, confinement facilities, visiting officer/enlisted quarters, and dormitories/ barracks - Priority 2: areas having 24-h operations, such as operations centers, and training and research, development, test, and evaluation (RDTE) facilities - Priority 3: all other structures routinely occupied over 4 h per day. (NOTE: Priority 2 and 3 structures will be measured for radon depending on the results of the initial phase measurements for Priority 1 structures.) (NOTE: Leased buildings will be measured for radon, but remedial action is the responsibility of the owner.) Verify that all initial radon measurements have been completed by the fourth quarter of fiscal year 1991 (FY91). (1)(2) (NOTE: The OEBGD requires that initial samples be collected from selected Priority 1 facilities, according to protocol to obtain a statistically representative sample by October Verify that records are prepared and maintained of all radon measurement results. (1)(2)
...	...
9-61. Initial phase measurements of Priority 1 structures are required to be done according to specific standards (AR 200-1, para 11-5a).	Determine if all Priority 1 buildings at the installation have had an initial screening that met the following requirements: (1)(2) - radon detectors were in place for 90 days - detectors were placed in the lowest living area (LLA) - radon detection was performed when buildings were closed (usually during winter or summer when windows and doors are shut due to heating or cooling).
...	...
9-62. Installations that have only Priority 2 and 3 facilities are required to conduct radon screening to obtain a statistically representative sample by 1 January 1996 (OEBGD, Chapter 16, Criteria 4).	Determine if the installation has only Priority 2 and 3 buildings. (1)(2)(3) Verify that radon screening is being done so that a sample is ready by 1 January 1996. (1)(2)(3)
...	...

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer

COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-63. Long term measurement (LTM) for radon is required for Priority 2 and 3 structures if the initial phase measurement of Priority 1 structures indicated radon concentrations greater than 4 pCi/L (OEBGD, Chapter 16, Criteria 3; AR 200-1, para 11-5b(2)).	Verify that 12-mo radon samples are collected from all Priority 1, 2, and 3 facilities if any Priority 1 structures on the installation had a radon level of greater than 4 pCi/L. (1)(2)(3)
...	...
9-64. When Priority 1 structures have radon levels of less than 4 pCi/L, but the conditions suggest that some Priority 2 and 3 structures may have higher levels, LTMs for radon levels must be done in Priority 2 and 3 structures (AR 200-1, para 11-5b(2)).	Verify that if all Priority 1 structures have radon levels less than or equal to 4 pCi/L, and conditions suggest that some Priority 2 and 3 structures may have levels higher than 4 pCi/L radon, LTMs for radon are done in Priority 2 and 3 structures. (1)(2)(3)
...	...
9-65. LTMs for radon are required to be done according to specific methodology (AR 200-1, para 11-5b(1)).	Verify that LTMs use alpha track-type radon detectors for a 1-year period under normal living conditions to establish an annual radon concentration. (1)(2)(3)
...	...
9-66. LTM of Priority 1 structures, where the initial radon level measurement was above 4 and less than 20 pCi/L is required (AR 200-1, para 11-5b(3), 11-6a).	Determine if Priority 1 buildings with an initial level of indoor radon between 4 and 20 pCi/L have undergone LTM as follows, prior to mitigation: (1)(2) - single family structures: one detector in LLA; if LLA is a basement, a second detector on the first floor - multiple family structures: one detector in LLA; if LLA is common, open area, one detector for every 2000 square feet (sq ft) of area in LLA and one per apartment in floor above basement .ip office buildings and warehouses: one detector for every 2000 sq ft in LLA.
...	...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-67. Installations are required to have a Quality Assurance/Quality Control (QA/QC) program to ensure the validity of test results (OEBGD, Chapter 16, Criteria 6).	Verify that a QA/QC program is in place and functioning. (1)(2)
...	...

9-68. Installations are required to perform radon mitigation of structures required by measured results (OEBGD, Chapter 16, Criteria 5; AR 200-1, Table 11-1).	Confirm that the schedule for radon mitigation is complied with as follows (see Appendices 9-1 and 9-2): (1)(2)(3)
	- buildings with indoor radon levels greater than or equal to 4 pCi/L but less than or equal to 20 pCi/L have been mitigated according to the following schedule, based on the 12-month long term measurement results for the buildings:
	  - 4 pCi/L or less - no action taken
	  - 4 to 8 pCi/L - mitigation completed within 5 yr
	  - 8 to 20 pCi/L - mitigation completed within 1-4 yr, depending on the level of the measurement
	- buildings with initial or long term radon measurement levels less than or equal to 20 pCi/L have been mitigated according to the following schedule:
	  - 20 to 200 pCi/L - remedial action completed within 6 mo
	  - greater than 200 pCi/L - remedial action completed within 30 days. If remedial action cannot reduce radon levels within 30 days, occupants must be relocated.

...	...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
9-69. Installations are required to perform post-mitigation measurements to confirm and document the effectiveness of mitigation (OEBGD, Chapter 16, Criteria 8; AR 200-1, para 11-5c).	Verify that the following procedures are carried out for structures with less than or equal to 20 pCi/L radon: (1)(2)(3) - use charcoal, canister-type detectors to provide rapid results (within days) - make measurements under closed-house/worst-case conditions to initially verify mitigation effectiveness - once levels are below established standards using rapid monitoring techniques, verify mitigation effectiveness using LTMs (1 yr) with alpha, track-type detectors. (NOTE: For structures less than 200 pCi/L before mitigation, occupants may be returned to quarters based on acceptable levels from rapid monitoring.) Verify that the following post-mitigation procedures are followed for structures with radon levels less than 20 and greater than or equal to 8 pCi/L: (1)(2) - use detectors that provide results within 90 days or sooner for worst-case, closed-house conditions - once radon levels are below established standards using the above method, verify mitigation effectiveness using LTMs (1 yr). (NOTE: Structures with less than 8 and greater than 4 pCi/L radon may use detectors that provide results in 90 to 180 days under worst-case, closed-house conditions for verification.)
...	...
9-70. Installations are required to take steps to keep radon levels at or below 4 pCi/L (AR 200-1, para 11-1b(2)).	Determine if installation has modified owned structures so that levels are kept at or below 4 pCi/L. (1)(2)(3) Inspect new construction to determine that: (1)(2)(3) - preventive measures have been incorporated to reduce radon migration - radon level is being measured.
...	...

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COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

9-71. Annual reports must be prepared and submitted (AR 200-1, para 11-2b(1) and para 1-22j(2)).	Obtain a copy of the annual report and review it for the following: (1)(2)
	- number of structures at the installation
	- number of structures measured for radon
	- number of buildings with radon measurements:
	  - greater than 200 pCi/L
	  - 20 to 200 pCi/L
	  - 8 to 20 pCi/L
	  - 4 to 8 pCi/L
	  - less than or equal to 4 pCi/L
	- number of buildings mitigated
	- highest level of radon recorded at installation.
	
	Verify that at the end of each fiscal year the annual report is submitted to MACOM. (1)(2)

...	...
9-72. Installations are required to maintain or have access to a database that will permanently capture all the information derived from the assessment and mitigation of radon (AR 200-1, para 11-2b(1)).	Verify that the installation maintains or has access to a database. (1)(2)(3) Verify that all radon information is contained in a database. (1)(2)(3)
...	...
9-73. Installations are required to develop an information package on the potential health effects of radon and provide the information along with the test results to facility occupants (OEBGD, Chapter 16, Criteria 7).	Verify that the installation has developed an information packet on radon. (1)(2)(3) Verify that the packet and the radon monitoring results are given to facility occupants. (1)(2)(3)

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer

Appendix 9-1

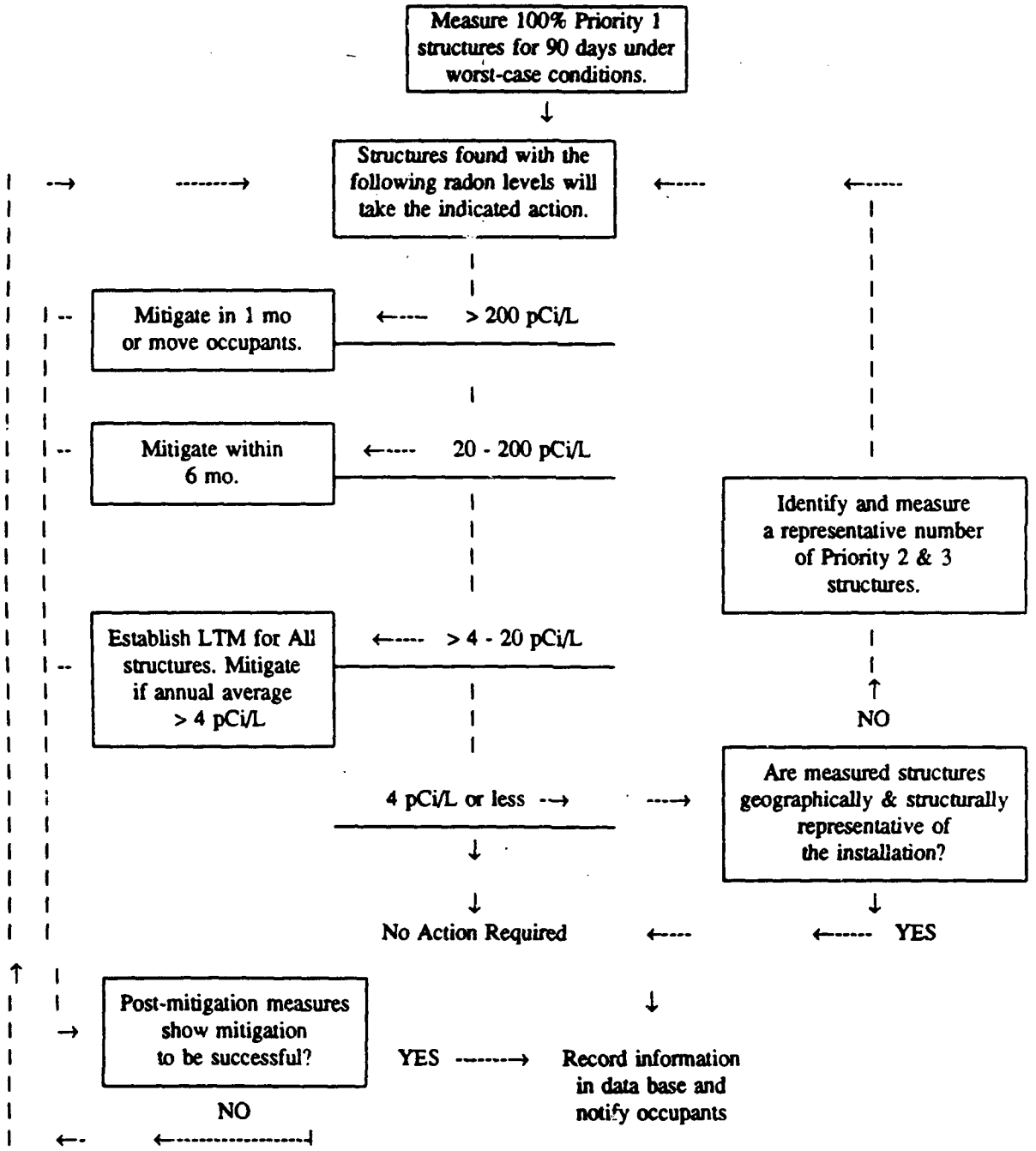
Radon Mitigation Schedule

Radon Level (pCi/L)	Mitigation within:
Greater than 200	1 mo of sample results or move occupants
200 or less, but greater than 20	6 mo of sample results
20 or less, but greater than 8	4 yr
8 or less, but greater than 4	5 yr
4 or less	No action required

Appendix 9-2

SCHEMATIC FLOW CHART OF THE ACTIONS REQUIRED

BY THE ARMY RADON REDUCTION PROGRAM



INSTALLATION:	COMPLIANCE CATEGORY: SPECIAL PROGRAMS MANAGEMENT Worldwide ECAS	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer

Section 10

Water Quality Management

Section 10

WATER QUALITY MANAGEMENT

A. Applicability of this Protocol

This protocol identifies regulations, responsibilities, and compliance requirements applicable to all water use, management, and discharge at military communities, including activities and procedures involved in the collection, treatment, storage, and distribution of drinking water and the collection, treatment, and discharge of wastewater.

If there are no Status of Forces Agreement (SOFA) requirements or host nation requirements relating to drinking water, Outside Continental United States (OCONUS) installations must comply with the U.S. Federal drinking water standards or the standards of the World Health Organization. Individual Major Army Commands (MACOMs) may institute a policy of treating drinking water according to U.S. Federal standards. The drinking water management practices in this protocol are based on the U.S. drinking water standards, but if it is the MACOM policy to abide by Federal drinking water standards, the evaluator should consult the most recent edition of the United States ECAS manual for those standards.

In Army Regulation (AR) 420-26, para 7a, OCONUS installations are directed to comply with the standards outlined in TB MED 229, as interpreted by the local command surgeon.

The regulations, responsibilities, and compliance requirements associated with wastewater discharge at military communities include, but are not limited to, the following examples:

- sanitary or industrial wastewater discharged directly to a receiving stream or through an on-site treatment facility
- sanitary or industrial wastewater discharged to an off-site treatment works or to a treatment plant of another Department of Defense (DOD) activity
- stormwater runoff from industrialized areas of the military community to a receiving stream or water body.

Most military communities have wastewater discharge of one type or another; therefore, this protocol will be applicable to most military communities.

B. DOD Regulations

- *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992, Chapter 3 addresses standards for potable water and the management of a drinking water facility. Chapter 4 contains criteria to control and regulate discharges of wastewaters into surface waters, including domestic and industrial wastewater discharges and pollutants from indirect dischargers.

- DOD Directive 6230.1, *Safe Drinking Water*, 24 April 1978, sets forth DOD policy for provisions of adequate, safe drinking water and compliance with the Safe Drinking Water Act and the standards established by 40 Code of Federal Regulations (CFR) 141. Outside of the United States, the provisions of this directive are consistent with international agreements, SOFA, or host country laws.

- DOD Instruction 4120.14, *Environmental Pollution Prevention, Control, and Abatement (NOTAL)*, 30 August 1977, implements within DOD, policies provided by Executive Order (EO) 12088 and Office of Management and Budget (OMB) Circular A-106 and establishes policies for developing and submitting plans for installing improvements needed to abate water pollution emanating from DOD military communities.

C. Army Regulations (ARs)

- AR 200-1, para 1-24(2), *Environmental Protection and Enhancement*, 23 May 1990, states that "in the absence of SOFA requirements and host nation requirements" drinking water which meets the United States Environmental Protection Agency (USEPA) standards or the standards of the World Health organization must be provided to protect human health. It also outlines reporting and documentation procedures.

- AR 420-26, *Water and Sewage*, 1 July 1978, para 7a, directs OCONUS installations to comply with the standards outlined in TB MED 229, as interpreted by the local command surgeon.

D. Responsibility for Compliance

- Directorate of Engineering and Housing (DEH) is responsible for maintaining all installed petroleum storage and dispensing systems. This responsibility often is discharged by the Liquid Fuels Maintenance (LFM) shop. The DEH also is responsible for the calibration of permanently installed meters. It also designs, constructs, and operates the water distribution system to provide sufficient drinking water to personnel. The DEH is responsible for providing adequate

water treatment to assure drinking water does not exceed the maximum contaminant levels established for human consumption. Training of operating personnel to meet proficiency levels consistent with the operator certification requirements that apply to their location is also the responsibility of the DEH. It also maintains an up-to-date map of the complete potable water system, makes repairs, and maintains the installations water supply contract. The DEH is responsible for monitoring wastewater discharge and streamwater quality at selected locations around the installation.

- The Preventive Medicine Officer is responsible for proper sample collection from drinking water systems at Army installations and for determining compliance with standards.

- The Spill Response Team (SRT) is tasked to respond to spills when requested by an On-Scene Commander (OSC) and to perform spill containment, recovery, cleanup, disposal, and restoration activities as directed by the OSC. The SRT is a multidisciplinary team often including the following people: Facilities

  Engineer, Environmental Coordinator, Director of Safety and Health, Fire Chief, Military Police, Public Affairs Officer, Safety Officer, and Staff Judge Advocate.

- The Fire Department provides support in emergency response, spill events, exercises, and fire protection activities. In addition, the department is responsible for making periodic fire safety inspections of flammable/combustible storage and handling areas, hazardous waste storage areas, and accumulation points on the installation.

- The Safety Officer is responsible for conducting workplace safety evaluations and inspections of the handling and storage of hazardous materials and waste. The Safety Officer will provide the appropriate manager with a report of findings and recommended corrective actions. The Safety Officer is also responsible for ensuring the prompt and accurate investigation of any hazardous material mishaps that result in injury or property damage.

- The Fuels Management Officer of DEH is responsible for the safe and efficient receipt, storage, handling, issuing, and accounting of all petroleum products to include all general operations and inspections.

E. Key Compliance Definitions

These definitions were obtained from the directives/instructions and ARs listed at the end of each definition. If there is no citation listed for the definition, it has been drawn from the U.S. CFRs.

- *Action Level* - the concentration of a substance in the water that determines appropriate treatment for a water system (OEBGD, Chapter 3, Definitions).

- *Best Available Technology (BAT)* - the best technology treatment techniques, or other means that the administrator finds, examined for effectiveness under field conditions and not solely under lab conditions that are available (taking cost into consideration). For the purposes of setting Maximum Contaminant Levels (MCLs) for synthetic organic chemicals, any BAT must be at least as effective as granular activated carbon.

- *BOD_5* - the 5-day measure of the pollutant parameter, biochemical oxygen demand (OEBGD, Chapter 4, Definitions).

- *$CBOD_5$* - the 5-day measure of the pollutant parameter, carbonaceous biochemical oxygen demand (OEBGD, Chapter 4, Definitions).

- *Community Water System (CWS)* - a public water system that has at least 15 service connections used by year-round residents, or that regularly serves at least 25 of the same people for more than 6 months (mo) a year (OEBGD, Chapter 3, Definitions).

- *Contaminant* - any physical, chemical, biological, or radiological substance in water.

- *Continuous Discharge* - a discharge that occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities.

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

- *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 (OEBGD, Chapter 4, Definitions).

- *Diatomaceous Earth Filtration* - a process resulting in substantial particulate removal in which:

  - a pre-coat cake of diatomaceous earth filter media is deposited on a support membrance (septum), and
  - additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake while the water is filtered by passing through the cake on the septum.

- *Direct Discharge* - any discharge of pollutants other than an indirect discharge by the host nation (OEBGD, Chapter 4, Definitions).

- *Direct Filtration* - a series of processes, including coagulation and filtration, but excluding sedimentation, that result in substantial particulate removal.

- *Discharge of a Pollutant* - any addition of any pollutant or combination of pollutants to waters of the host nation from any point source (OEBGD, Chapter 4, Definitions).

- *Disinfectant* - any oxidant, including but not limited to, chlorine, chlorine dioxide, chloramines, and ozone, intended to kill or inactivate pathogenic microorganisms in water (OEBGD, Chapter 3, Definitions).

- *Disinfection* - a process that inactivates pathogenic organisms in water by chemical oxidants or equivalent agents.

- *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.

- *Domestic Wastewater Treatment Plant (DWTP)* - any DOD or host nation facility designed to treat wastewater, the majority of which is made up of domestic sewage, before its discharge to waters of the host nation (OEBGD, Chapter 4, Definitions).

- *Effluent Limitation* - any restriction imposed on quantities, discharge rates, and concentrations of pollutants that are ultimately discharged from point sources into waters of the host nation (OEBGD, Chapter 4, Definitions).

- *Existing Source* - a source that discharges pollutants and is in operation or under construction prior to 1 October 1994 (OEBGD, Chapter 4, Definitions).

- *Filtration* - a process for removing particulate matter from water by passage through porous media.

- *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.

- *Gross Alpha Particle Activity* - the total radioactivity due to alpha particle emissions, as inferred from measurements on a dry sample.

- *Groundwater Under the Direct Influence of Surface Water* - any water below the surface of the ground with:
    1. significant occurrence of insects or other macro-organisms, algae, or large-diameter pathogens such as *Giardia lamblia*, or
    2. significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH that closely correlate to climatological or surface water conditions (OEBGD, Chapter 3, Definitions).

  (Direct influence must be determined for individual sources.)

- *Halogen* - one of the chemical elements chlorine, bromine, or iodine.

- *Indirect Discharge* - the introduction of pollutants in process wastewater to a DWTP (OEBGD, Chapter 4, Definitions).

- *Industrial Wastewater Treatment Plant* - any DOD facility designed to treat wastewater before its discharge to waters of the host nation other than a DWTP (OEBGD, Chapter 4, Definitions).

- *Interference* - a discharge that, alone or in conjunction with one or more discharges from other sources, inhibits or disrupts the publicly owned treatment works (POTW) and causes a violation of any requirement of a POTW's permit.

- *Large Water System* - in reference to lead and copper in systems, this refers to a water system that serves more than 50,000 people.

- *Lead Service Line* - a service line made of lead, that connects the water main to the building inlet and any lead pigtail, gooseneck, or other fitting that is connected to such a line (OEBGD, Chapter 3, Definitions).

- *Legionella* - a genus of bacteria, some species of which have caused a type of pneumonia called Legionnaires Disease.

- *Maximum Contaminant Level (MCL)* - the maximum permissible level of a contaminant in water that is delivered to the free-flowing outlet of the ultimate user of a public water system, excluding turbidity for which the maximum permissible level is measured after filtration (OEBGD, Chapter 3, Definitions).

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

- *Maximum Daily Discharge Limitation* - the highest allowable daily discharge (OEBGD, Chapter 4, Definitions).

- *Maximum Total Trihalomethane Potential* - the maximum concentration of total trihalomethanes produced in a given water containing a disinfectant residual, after 7 days at a temperature of 25 ^{o}C or above.

- *Medium Size Water System* - in reference to lead and copper in systems, this refers to a water system that serves more than 3300 and fewer than or equal to 50,000 people.

- *Near the First Service Connection* - located 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.

- *New Source* - a source built or significantly modified after 1 October 1994 that discharges pollutants (OEBGD, Chapter 4, Definitions).

- *Non-Public Water System (NPWS)* - a system that is not a public water system. For example, a well serving a building (OEBGD, Chapter 3, Definitions).

- *Non-Transient, Non-Community Water System (NTNCWS)* - a public water system that is not a community water system and that regularly serves at least 25 of the same people for more than 6 mo a year. Examples include a school or a factory with its own water supply (OEBGD, Chapter 3, Definitions).

- *Pass Through* - a discharge that exits the POTW into waters in quantities or concentrations that, alone or in conjunction with a discharge from other sources, are a cause of a violation of any requirement of the POTW's permit.

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

- *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.

- *Point-of-Entry Treatment Device* - a treatment device applied to the drinking water entering a structure to reduce contaminants in the drinking water throughout the structure.

- *Point-of-Use Treatment Device* - a treatment device applied to a tap to reduce contaminants in drinking water at that tap (OEBGD, Chapter 3, Definitions).

- *Point Source* - any discernible, confined, and discrete conveyance including, but not limited to, a pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, or rolling stock, but not including vessels, aircraft, or any conveyance that merely collects natural surface flows of precipitation (OEBGD, Chapter 4, Definitions).

- *Pollutant* - includes, but is not limited to, the following: dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt; and industrial, municipal, and agricultural waste discharged into water (OEBGD, Chapter 4, Definitions).

- *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.

- *Process Wastewater* - any water that during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, by-product, or waste product (OEBGD, Chapter 4, Definitions).

- *Public Water System (PWS)* - a system that provides piped water to the public for human consumption, and that has at least 15 service connections or regularly serves an average of at least 25 individuals daily for 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 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." (OEBGD, Chapter 3, Definitions).

- *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.

- *Residual Disinfectant Concentration* - ("C" in CT calculations) the concentration of disinfectant measured in milligrams per liter (mg/L) in a representative sample of water.

- *Sanitary Survey* - an on-site review of the water source, facilities, equipment, operation, and maintenance of a public water system for the purpose of evaluating the adequacy of such elements for producing and distributing potable water (OEBGD, Chapter 3, Definitions).

- *Sedimentation* - a process for removing solids before filtration by gravity or separation.

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

- *Standard Sample* - the aliquot of finished drinking water that is examined for the presence of coliform bacteria.

- *Substantial Modification* - any functional alteration to an existing facility, the cost of which exceeds $1 million, regardless of funding source (OEBGD, Chapter 4, Definitions).

- *Surface Water* - all water that is open to the atmosphere and subject to surface runoff.

- *System with a Single Service Connection* - a system that supplies drinking water to consumers via a single service line.

- *Total Suspended Solids (TSS)* - the pollutant parameter that measures total non-filterable suspended solids (OEBGD, Chapter 4, Definitions).

- *Total Toxic Organic (TTO)* - the summation of all quantifiable values greater than 0.01 mg/L for toxic organics (OEBGD, Chapter 4, Definitions).

- *Total Trihalomethanes (TTHM)* - the sum of the concentration in milligrams per liter of chloroform, bromoform, dibromochloromethane, and bromodichloromethane (OEBGD, Chapter 3, Definitions).

- *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.

- *Underground Injection Control* - a subsurface emplacement through a bored, drilled, driven, or dug well, where the depth is greater than the largest surface dimension, whenever a principle function of the well is the emplacement of any fluid (OEBGD, Chapter 3, Definitions).

- *Virus* - a micro-organism of fecal origin infectious to humans by waterborne transmission.

- *Vulnerability Assessment* - an evaluation by the DOD that shows the contaminants of concern either have or have not been used in a watershed area or the source of water for the system is not susceptible to contamination (OEBGD, Chapter 3, Definitions).

- *Waters of the Host Nation* - surface waters including the territorial seas recognized under customary international law, including: all waters that are currently used, were used in the past, or may be susceptible to use in commerce; waters that are or could be used for recreation or other purposes; waters from which fish or shellfish are or could be taken and sold; waters that are used or could be used for industrial purposes by industries; waters including lakes, rivers, and streams (including intermittent streams, sloughs, prairie potholes, or natural ponds); and tributaries of waters (OEBGD, Chapter 4, Definitions).

WATER QUALITY MANAGEMENT

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All installations	10-1 and 10-3	(1)(2)
Drinking water		
General	10-4 through 10-10	(1)(2)(9)
Standards	10-11	(1)(9)
Monitoring/sampling	10-12 through 10-15	(3)(9)
Disinfection/filtration	10-16 through 10-18	(2)(9)
Notification/reporting requirements	10-19 and 10-20	(2)(3)
Lead and copper in drinking water systems	10-21 through 10-23	(1)(2)(3)(9)
Alternative water supplies	10-24	(3)(9)
Underground injection control	10-25	(3)(9)
Aquifers	10-26	(3)(9)
Swimming pools	10-27 and 10-28	(1)(2)(3)
Wastewater discharge		
General	10-29 and 10-30	(1)(2)(9)(21)(22)
Point source discharges	10-31 through 10-34	(1)(2)(9)(14)
DWTPs	10-35 through 10-41	(2)(6)(9)(14)(15)
Effluent limitation	10-42 through 10-45	(2)(9)

(a)CONTACT/LOCATION CODE:

(1) Directorate of Engineering and Housing (DEH)
(2) Environmental Coordinator (EC)
(3) Preventive Medicine Officer
(6) Director of Logistics (DOL)
(9) Chief of Operations and Maintenance (O&M)
(14) Wastewater Treatment Plant Supervisor (O&M)
(15) Land Management Officer (DEH)
(21) Public Affairs Office (PAO)
(22) Staff Judge Advocate

WATER QUALITY MANAGEMENT

Records to Review

- Permits
- Discharge monitoring reports for the past 2 years (yr)
- Laboratory records, procedures, and results
- Monthly operating reports for wastewater treatment facilities
- Flow monitoring calibration certification and supporting records
- Ash pond volume certification and supporting records
- Red water inspection records
- Special reports, certifications, etc., required by permit
- Spill Prevention Control and Countermeasure (SPCC) Plan
- All records required by SPCC Plan
- All notices of noncompliance
- All notices of violations
- Sewage treatment plant operator certification
- Administrative orders
- Sewer and storm drain layout
- Local sewer ordinance
- Local service use permit
- Notification to local POTW
- Old Spill Reports
- Repair/Maintenance records for the wastewater treatment system
- Design plans for wastewater treatment plants
- Names and phone numbers of operators of sewage treatment plant
- Lab operators (wastewater analysis)
- Stormwater permits

Physical Features to Inspect

- Discharge to POTW
- Discharge outfall pipes
- Wastewater treatment facilities
- Industrial treatment facilities
- Streams, rivers, and open waterways
- Floor and sink drains (especially in industrial areas)
- Storm water collection points (especially in industrial areas)
- Oil storage tanks
- Oil/water separators
- fire training pit
- Nonpoint source discharge areas
- Motor pools and vehicle maintenance stands
- Wash racks

People to Interview

- Directorate of Engineering and Housing (DEH)
- Environmental Coordinator (EC)
- Preventive Medicine Officer
- Director of Logistics (DOL)
- Chief of Operations and Maintenance (O&M)
- Wastewater Treatment Plant Supervisor (O&M)
- Land Management Officer (DEH)
- Public Affairs Office (PAO)
- Staff Judge Advocate

COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL INSTALLATIONS	
10-1. Determine actions or changes since previous review (GMP).	Check copy of previous review to determine if noncompliance issues have been resolved. (1)(2)
...	...
10-2. Copies of all relevant DOD directives/ instructions, ARs, and guidance documents on water quality should be maintained at the installation (GMP).	Verify the following are current and readily available: (1)(2) - *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992. - DOD Instruction 4120.14, *Environmental Pollution Prevention, Control, and Abatement*, 30 August 1977. - AR 40-5, *Preventive Medicine*, 15 October 1990. - AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990. - AR 420-46, *Water and Sewage*, 1 July 1978. - AR 700-136, *Land Based Water Resources Management in Contingency Operations*, 1 November 1984. - AR 420-46, *Water and Sewage*. - TB MED 575, *Occupational and Environmental Health: Swimming Pools and Bathing Facilities*. - TB MED 576, *Occupational and Environmental Health: Sanitary Control and Surveillance of Water Supplies at Fixed Installations*. - TB MED 577, *Occupational and Environmental Health: Sanitary Control and Surveillance of Field Water Supplies*. - TM 5-660, *Maintenance and Operation of Water Supply, Treatment, and Distributions Systems*. - TM 5-665, *Operations and Maintenance of Domestic and Industrial Wastewater Systems*. - TM 5-813, series (1 through 7), *Water Supply*. - TM 5-814-3, *Domestic Wastewater Treatment*. - TM 5-814-8, *Evaluation Criteria Guide for Water Pollution Prevention, Control, and Abatement Programs*. - TM 5-813, series (1 through 7), *Water Supply*.
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-3. Installations are required to comply with applicable MACOM regulations and substantive host nation regulations concerning water quality (AR 200-1, para 1-40).	Verify that the installation is complying with MACOM and host nation requirements. (1) (NOTE: Issues typically regulated by the MACOM or host nation agencies include: - drinking water contaminant level requirements - water treatment certification and training requirements - water system surveys - reporting requirements - monitoring frequency - use of groundwater - use and maintenance of wells - UIC programs - nonpoint sources - wastewater - monitoring and record keeping for wastewater 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 discharge - certification requirements for employees.)
...	...
DRINKING WATER **General**	
10-4. DOD water systems are required to meet specific operating requirements concerning positive pressure and maintenance practices (OEBGD, Chapter 3, Criteria 1(f) through 1(h)).	Verify that the water system maintains continuous positive pressure in the water distribution system. (9) Verify that there is an effective cross connection control and backflow prevention program. (9) Verify that the water distribution operation and maintenance practices include: (9) - maintenance of a disinfectant residual throughout the water distribution system (except where an effective ultraviolet or ozone disinfectant process is used) - proper repair and replacement of mains procedures (including disinfection and bacteriological testing) - implementation of an effective annual water main flushing program - proper operation and maintenance of storage tanks and reservoirs, and maintenance of distribution system components (including hydrants and valves).
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-5. The DEH must keep records of actions taken to correct or repair any part of the distribution system (OEBGD, Chapter 3, Criteria 1(b) and 1(m); AR 420-46, para 15).	Determine if there have been any changes to the water system since the previous review, and review the map of the complete potable water system. (9) Verify that records of operational changes have been maintained for at least 3 yr. (2)(9) Verify that monthly operating reports on performance are reviewed and that the water supply system master plan is updated every 5 yr. (9)
...	...
10-6. The installation is required to prepare and update water supply distribution system, sectional, and valve location maps (OEBGD, Chapter 3, Criteria 1(a) and AR 420-46, para 5c).	Verify that water supply distribution system, sectional, and valve location maps are kept current. (1)(9) Verify that each pumping station posts operating procedures and a piping diagram, identifying each valve and pump. (9)
...	...
10-7. Installations are required to have a standard operating procedure (i.e., an emergency contingency plan) for alerting personnel in national or local emergencies or at times of actual or anticipated noncompliance (OEBGD, Chapter 3, Criteria 1(j) and AR 420-46, para 5d).	Verify that a standard operating procedure (emergency contingency plan) is in place and includes: (1)(9) - identification of key personnel - procedures to restore service - procedures to isolate damaged lines - identification of alternative water supplies - installation public notification procedures - conduct of a vulnerability assessment.
...	...
10-8. The EC should review plans for water system modifications (GMP).	Determine if the EC has reviewed the plans. (1)(9)
...	...
10-9. Installations are required to conduct sanitary surveys of the water system (OEBGD, Chapter 3, Criteria 1(d)).	Verify that surveys of the water system, including a review of required water quality analysis, are conducted annually and as needed. (1)(9) (NOTE: Off-installation surveys will be coordinated with host nation authorities.)
...	...
10-10. Installations are required to conduct vulnerability assessments (OEBGD, Chapter 3, Criteria 1(n)).	Verify that the installation has conducted a vulnerability assessment. (1)(9)

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Standards **10-11.** DOD PWSs are required to meet specific monitoring requirements and MCLs for inorganic chemicals, fluorides, and synthetic organics, (OEBGD, Chapter 3, Criteria 2(b), 2(c), and 2(e)).	Verify that the inorganic chemicals in the water distributed to end users does not exceed the limitations in Appendix 10-1. (1)(9) Verify that PWSs are monitored for inorganic chemicals at the frequencies outlined in Appendix 10-2. (1)(9) (NOTE: When the MCLs for inorganic compounds are exceeded, quarterly monitoring is to be increased as detailed in Appendix 10-2 until authorities determine the system is reliable.) Verify that fluoride monitoring involves collecting one treated water sample at any entry point to the distribution system annually for surface water systems and once every 3 yr for groundwater systems. (1)(9) (NOTE: Daily monitoring is recommended for systems practicing fluoridation using the criteria in Appendix 10-3.) Verify that synthetic organic chemicals in water distributed to people does not exceed the limitation outlined in Appendix 10-1 and that systems are monitored according to the schedule outlined in Appendix 10-4. (1)(9) (NOTE: When the MCLs for synthetic organic chemicals are exceeded, the installation will begin immediate quarterly monitoring, increase monitoring if the level of any contaminant is at its detection limit but less than its MCL (see Appendix 10-4), and continue until the system is reliable.) Verify that if the system is out of compliance, notification is done as soon as possible, but no later than 14 days after the violation. (1)(9) Verify that if the system is out of compliance and it is only monitoring annually under a waiver, it immediately increases monitoring to the levels outlined in Appendix 10-4 until the system is determined to be reliable. (1)(9)

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Monitoring/Sampling **10-12.** DOD PWSs and NTNCWS are required to meet specific MCL, monitoring, and notification requirements for total trihalomethanes and radionuclides (OEBGD, Chapter 3, Criteria 2(f) and 2(g)).	Verify that PWSs and NTNCWSs that add a disinfectant (oxidant, such as chlorine, chlorine dioxide, chloramines, or ozone) to any part of the treatment process do not exceed an MCL of 0.10 mg/L for total trihalomethanes. (3)(9) Verify that systems that add a disinfectant monitor for total trihalomethanes as outlined in Appendix 10-5. (3)(9) Verify that if the systems exceed the MCL for total trihalomethanes, notification is done as soon as possible, but no later than 14 days after the violation. (3)(9) Verify that PWSs and NTNCWSs meet the MCLs for radionuclides and that monitoring is performed as outlined in Appendix 10-6. (3)(9) Verify that if the average annual maximum contaminant level for gross alpha activity, total radium, or gross beta is exceed, the appropriate host nation authorities and the public are notified as soon as possible, but no later than 30 days after the violation. (3)(9) (NOTE: After a violation of an MCL for radionuclides, monitoring will continue (monthly for gross beta, quarterly for gross alpha) until remedial actions are completed and the average annual concentration no longer exceeds the MCL.) Verify that if any gross beta MCL is exceeded, the major radioactive components are identified. (3)(9)
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-13. DOD water systems, regardless of whether they produce or purchase water, are required to meet specific MCL and testing requirements for total coliform bacteria (OEBGD, Chapter 3, Criteria 2(a)).	(NOTE: Compliance may be assured by either independent testing or validated supplier testing.) Verify that PWSs have no more than 5 percent positive samples for the presence of total coliforms per month for a system examining 40 or more samples per month. (3)(9) Verify that PWSs have no more than one positive sample for the presence of total coliforms per month when a system analyzes less than 40 samples per month. (3)(9) (NOTE: The MCL for total coliforms is exceeded whenever a routine sample is positive for fecal coliforms or E. Coli or when any repeat sample is positive for total coliforms.) Verify that each system has a written, site specific monitoring plan and collects routine samples according to the schedule in Appendix 10-7. (3)(9) Verify that systems with initial samples testing positive collect repeat samples as soon as possible, preferably on the same day. (3)(9) Verify that repeat samples are taken at the same tap as the original sample and that an upstream and a downstream sample are taken in the vicinity of the tap. (3)(9) Verify that monitoring continues until total coliforms are no longer detected. (3)(9) Verify that when routine or repeat samples are positive for total coliforms, they are tested for fecal coliforms or E. Coli. (3)(9) (NOTE: Fecal-type testing can be foregone on a total coliform positive sample if fecal coliforms or E. Coli are assumed to be present.) Verify that if the system has exceeded the MCL, the installation notifies the appropriate individuals no later than the end of the next business day that an acute risk to public health may exist. (3)(9)
...	...
10-14. PWS filtered waters are required to be tested daily for turbidity and meet a specific MCL for turbidity (OEBGD, Chapter 3, Criteria 2(i)).	Verify that the monthly average of daily samples does not exceed 1 NTU in more than 5 percent of the samples. (3)(9) Verify that the average of 2 consecutive days does not exceed 5 NTU. (3)(9) Verify that if the MCL for turbidity is exceeded, notification is made as soon as possible, but no later than 14 days after the violation. (3)(9)

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-15. NPWSs are required to be monitored for total coliforms and disinfectant residual periodically (OEBGD, Chapter 3, Criteria 2(j)).	Determine if the installation operates an NPWS. (3)(9) Verify that periodic monitoring is done for total coliforms and disinfectant. (3)(9)
...	...
Disinfection and Filtration	
10-16. Water mains, wells, and equipment are required to be disinfected after construction, repair, taps, or contamination (AR 420-46, para 6b).	Verify that engineering personnel have disinfected water mains, wells, and equipment after construction, repair, taps, or contamination. (2)(9)
...	...
10-17. Installations that use surface water sources or groundwater sources under direct influence of a surface water source must conform to the surface water treatment standards found in Appendix 10-8 (OEBGD, Chapter 3, Criteria 1(e) and Criteria 2(h) and Table 3-1).	Verify that the standards found in Appendix 10-8 are met. (2)(9)
...	...
10-18. Installations that use a groundwater source as their supply of drinking water are required to disinfect the supplies (OEBGD, Chapter 3, Criteria 1(e)).	Determine if the installation's water supply is groundwater. (2)(9) Verify that groundwater supplies are disinfected. (2)(9)
...	...
Notification and Reporting Requirements	
10-19. Specific types of records are required to be maintained for DOD water systems (OEBGD, Chapter 3, Criteria 1(l)).	Verify that records of chemical analyses are kept for 10 yr. (2)(3) Verify that records showing monthly operating reports are maintained for at least 3 yr. (2)(3) Verify that records of bacteriological results are maintained for at least 5 yr. (2)(3)

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT *Worldwide ECAS*	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-20. When drinking water standards are exceeded, specific notifications must be made (OEBGD, Chapter 3, Criteria 3 and AR 420-46, para 5d).	Determine if the following public notification procedures were followed: (2) - notices were placed in a daily newspaper for 3 consecutive days or a weekly newspaper for 3 consecutive weeks - notice was published within 14 days after the noncompliance was determined - radio and TV stations were notified within 7 days after the noncompliance was determined - written notices were sent to occupants of base housing - notices were published in the daily bulletin. Verify that when a DOD water system is out of compliance, the Executive Agent is notified. (2) Verify that the notice is clear and understandable. (2) (NOTE. The Executive Agent will coordinate notification of host authorities where off-installation populations are at risk.)
...	...
LEAD AND COPPER IN DRINKING WATER SYSTEMS	
10-21. Installations are required to use only lead-free pipe, solder, flux, and fittings in the installation or repair of water systems and plumbing systems for drinking water (OEBGD, Chapter 3, Criteria 1(k)).	Very that only lead-free materials are used. (1)(3)
...	...
10-22. Installations are required to notify their users about lead in drinking water systems (OEBGD, Chapter 3, Criteria 1(k)).	Verify that the installation provides public notification when there is a potential health threat of leaded water. (1)(2)
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-23. DOD PWSs and NTNCWSs are required to meet specific standards for lead and copper action levels and reporting requirements when these levels are exceeded (OEBGD, Chapter 3, Criteria 2(d) and Table 3-6).	Verify that the concentration of lead does not exceed 0.015 mg/L. (3)(9) Verify that the concentration of copper does not exceed 1.3 mg/L. (3)(9) (NOTE: Actions such as corrosion control treatment, public education, and removal of lead service lines must be triggered if the lead and copper levels are exceeded in more than 10 percent of all sampled taps.) Verify that monitoring is done in accordance with Appendix 10-9 and sampling sites selected as outlined in Appendix 10-9. (3)(9) Verify that if standards are exceeded, additional water samples are collected as specified in Appendix 10-9. (3)(9) Verify that optimal corrosion control treatment is pursued. (3)(9) Verify that as action levels are exceeded after implementation of applicable corrosion control and source water treatment, lead service lines are replaced, if lead service lines are causing the excess. (3)(9)
...	...
ALTERNATIVE WATER SUPPLIES **10-24.** A DOD installation will, if necessary, only use alternative water sources, including point of entry and point of use treatment devices and bottled water supplies, that are approved by the installation commander (OEBGD, Chapter 3, Criteria 2(k)).	Determine if the installation uses alternative water sources. (3)(9) Verify that alternative water sources are approved. (3)(9)
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
UNDERGROUND INJECTION CONTROL	
10-25. Underground injection must be done in a manner that protects underground water resources (OEBGD, Chapter 3, Criteria 1(i)).	Verify that at a minimum, monitoring is done to determine the effects of any underground injection wells on nearby groundwater supplies. (3)(9)
...	...
AQUIFERS	
10-26. Installations are required to protect water supply aquifers from contamination (OEBGD, Chapter 3, Criteria 1(c)).	Determine if the installation is located by a water supply aquifer. (3)(9) Verify that the aquifer is protected by suitable placement and construction of wells, siting and maintenance of septic systems, on-site treatment units, and appropriate land use management. (3)(9)
...	...
SWIMMING POOLS	
10-27. Swimming pools must be operated, maintained, and repaired according to the standards outlined in TB MED 575 (AR 420-46, para 14a).	Interview the staff maintaining the pool and verify that the following is being done: (1)(2) - the pH of the pool does not drop below 7.2 - chlorine residuals and pH are determined at least four times daily when the pool is in use - records for pH and chlorine are maintained for at least two swimming seasons - when the membrane filter technique is used to determine the number of coliform colonies, the arithmetic mean for all samples analyzed for the past 30 days is less than or equal to 2.0 coliform organisms per 100 milliliters (mL) - when the multiple tube fermentation technique is used, not more than 15 percent of the samples examined in the past 30 days shows positive results for coliform organisms in any of the 5 mL portions of this technique - in terms of standard plate count, after incubation of the nutrient agar plates for 48 h at 35 +/- 0.5 °C, the bacterial count is less than or equal to 200 bacteria per milliliter in greater than 85 percent of the samples examined in the last 30 days - samples for bacteriologic examinations and concurrent pH and chlorine residual measurement are collected at least once a week. (NOTE: TM 5-660 also contains guidance on the operation and management of swimming pools.)
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-28. Preventive Medicine (PVNTMED) personnel are required to perform specific duties in relationship to swimming pools and swimming areas (AR 40-5, para 12-6b).	Verify that PVNTMED personnel inspect, on a periodic basis, the swimming facilities and operational logs to ensure the operations and monitoring required by TB MED 575 are being done. (3) Verify that PVNTMED personnel: (3) - perform annual preseason and/or preopening inspections of swimming facilities - perform bacteriological sampling according to TB MED 575 - ensure that chlorine residual analyses are done by an approved method - maintain records of sanitary surveys, inspections, results of bacteriological analyses, and other pertinent information - conduct a yearly sanitary survey of all natural swimming areas under installation control.
...	...
WASTEWATER DISCHARGE **General**	
10-29. Each installation is required to have a system for investigating water pollution complaints and allegations from individuals and water pollution control authorities (OEBGD, Chapter 4, Criteria 4; AR 200-1, para 3-3g(1) and 3-3g(2)).	Determine if there are procedures for investigating water pollution complaints and allegations. (1)(2)(9)(21)(22) Note any cases of legal or potentially legal action and if they were reported immediately through Judge Advocate channels to Army Headquarters. (1)(2)(9)(21)(22)
...	...

10-30. Activities or installations that have a significant potential for spills or batch discharges are required to develop a slug prevention plan (OEBGD, Chapter 4, Criteria 1(f)).	Verify that the plan contains the following, at a minimum: (1)(2)(9)
	
	- a description of discharge practices, including nonroutine batch discharges
	- a description of stored chemicals
	- a plan for immediately notifying the DWTP of slug discharges and discharges that would violate standards, including standards for subsequent written notification within 5 days
	- necessary practices to prevent accidental spills, including:
	  - inspection and maintenance of storage areas
	  - handling and transfer of materials
	  - loading and unloading operations
	  - control of plant site runoff
	  - worker training
	- proper procedures for building containment structures or equipment
	- necessary measures to control toxic organism pollutants and solvents
	- proper procedures and equipment for emergency response and any subsequent plans needed to limit damage to the treatment plant or the environment.

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Point Source Discharges	

10-31. New point source dischargers of pollutants are required to meet specific effluent limitations (OEBGD, Chapter 4, Criteria 1 and 3).	Verify that all new sources of pollutants to host nation waters comply with the following: (1)(2)(9)
	- BOD_5:
	  - 30-day average does not exceed 30 mg/L
	  - 7-day average does not exceed 45 mg/L
	- TSS
	  - 30-day average does not exceed 30 mg/L
	  - 7-day average does not exceed 45 mg/L
	- effluent pH values are maintained between 6.0 and 9.0.
	
	(NOTE: The Executive Agents may, at their discretion, substitute $CBOD_5$ for the parameter BOD_5 at new sources. In those cases, the following apply:
	- 30-day average does not exceed 25 mg/L
	- 7-day average does not exceed 40 mg/L.)
	
	(NOTE: Discharge at a new source can be exempted from the pH limit if it is demonstrated that:
	- no inorganic chemicals are added to the waste stream as part of the treatment process
	- contributions from industrial sources do not cause the pH of the effluent to be outside the 6.0 to 9.0 range.)
	
	Verify that monitoring of these parameters is done according to Appendix 10-10. (1)(2)(9)

...	...

10-32. Existing point source dischargers of pollutants are required to meet specific effluent limitations and monitoring requirements (OEBGD, Chapter 4, Criteria 2 and 3).	Verify that all existing sources of pollutants to host nation waters comply with the following: (1)(2)(9)
	- BOD_5:
	  - 30-day average does not exceed 45 mg/L
	  - 7-day average does not exceed 65 mg/L
	- TSS
	  - 30-day average does not exceed 45 mg/L
	  - 7-day average does not exceed 65 mg/L
	- effluent pH values are maintained between 6.0 and 9.0.
	
	Verify that monitoring of these parameters is done according to Appendix 10-10. (1)(2)(9)

...	...
10-33. Samples of wastewater discharges should be processed using proper collection, testing, and shipping procedures (GMP).	Verify that for wastewater sampling: (2)(9)(14) - proper sample containers are used - samples are refrigerated during compositing - proper preservation techniques are used.
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-34. Noncompliance must be reported (AR 200-1 para 3-3a(4)).	Determine if the Commander reports any potential problems that might cause installation to be in noncompliance with permits. (2)(9) Verify that notice of violation (NOV) reports are sent through command channels to United States Army Toxic and Hazardous Materials Agency (USATHAMA), ATTN: CETHA-EC-S. (2)(9)
...	...
DWTPs	
10-35. Installations must not discharge, into a treatment works, any pollutant that would cause "pass through" or "interference" (OEBGD, Chapter 4, Criteria 1(e) and 1(g) and AR 200-1, para 3-3e(2)).	Review the sources of discharge and the composition of discharges at the installation. (9)(14) Verify that the installation is not discharging, to a DWTP, pollutants which would cause a "pass through" or "interference." (9)(14) Verify that none of the following oils are being discharged to the DWTP: (9)(14) - petroleum - nonbiodegradable cutting oil - products of mineral origin. Verify that trucked and hauled waste is not discharged into the DWTP, except at locations specified by the DWTP. (9)(14)
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-36. Installations must not introduce specific pollutants into a DWTP (OEBGD, Chapter 4, Criteria 1(a) through 1(d) and AR 200-1, para 3-3e(2)).	Verify that pollutants that create a fire or explosion hazard in the collection system or treatment facility are not discharged, specifically: (9)(14) - wastewater with a closed cup flashpoint of less than 60 ^{o}C - liquid waste solutions that contain more than 24 percent alcohol by volume with a flash point less than 60 ^{o}C (140 ^{o}F) - nonliquid wastes under standard temperature and pressure that can cause a fire through friction - ignitable compressed gases - oxidizers such as peroxide. Verify that corrosive pollutants, including those with a pH lower than 5.0, are not discharged unless the treatment facilities and collecting systems are designed to handle such discharges. (9)(14) Verify that solid or viscous pollutants in amounts that will cause obstruction to the flow are not being discharged to the DWTPs. Examples are: (9)(14) - wastes from fish cleaning stations - pieces of metal, rubber, and wood from shops - sand and sediment. Verify that no pollutants, including oxygen demand pollutants, are released at a flow rate or concentration that will cause interference with the treatment operations. (9)(14) Verify that discharges with a temperature greater than 104 ^{o}F when they reach the treatment facility, or high enough to interfere with the biological treatment processes, are not discharged. Examples are: (9)(14) - scrubber water - boiler blow down.

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-36. (continued)	Verify that oil/water separators connected to the sanitary sewer are operating correctly. (9)(14) Verify that the following types of waste are not discharged because of their reactivity and fume toxicity: (9)(14) - wastes that are normally unstable and readily undergo violent changes without detonating - wastes that react violently with water - wastes that form explosive mixtures with water or form toxic gases or fumes when mixed with water - cyanide or sulfide wastes that can generate potentially harmful toxic fumes, gases, or vapors - wastes capable of detonation or explosive decomposition or reaction at standard temperature and pressure - wastes that contain regulated explosives - wastes that produce any toxic fumes, vapors, or gases with the potential to cause safety problems or harm to workers. Determine if the installation has been granted any exemptions or variances concerning its discharges. (9)(14)
...	...
10-37. *Installations* must notify the DWTP immediately of any discharge that could cause problems to the DWTP (OEBGD, Chapter 4, Criteria 1(f)(iii)).	*Verify that personnel* at the installation are aware of the need to notify the DWTP of any discharge that would cause problems. (9)(14)
...	...
10-38. Personnel engaged or employed in operation and maintenance of water pollution control facilities must be trained (AR 200-1, para 3-6).	Verify, by interviewing operating/maintenance staff at the plant, that periodic training is conducted. (9)(14) Verify, by checking operating staff training records, that training is conducted. (9)(14)
...	...
10-39. Supervisors at Army treatment plants are required to provide training in safety and occupational hazards to operating staff (TM 5-660, para 1-17).	Verify that safety and occupational hazards instructions are posted around plant or readily available to plant personnel. (9)(14) Verify that continual training is conducted on proper safety practices at plant. (9)(14)
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-40. Treatment plant supervisors are required to maintain certain operating logs and records (TM 5-660, para 18-20).	Check logs and records of domestic wastewater plant supervisor. (9)(14) Verify that forms are posted daily and are neat and legible. (9)(14) Verify that copies are distributed as follows: (9)(14) - original retained by the DEH - duplicate to the MACOM.
...	...
10-41. Even where not covered by permit, stormwater discharge on the installation should be uncontaminated and periodically surveyed (GMP).	Check stormwater surveillance locations. (2)(9)(15) Check analytical records and discuss any instances of elevated readings for any parameters. (2)(9) Check plan for storm sewer system and location of all outfalls and discharge points. (2)(9)(15) Check areas of stormwater discharge physically for evidence of contamination (oil sheen, discoloration, etc.). (2)(9) Check any oil/water separators connected to the storm sewer on the installation for proper operation and maintenance. (2)(9) Check major industrial shops or industrial areas physically, and look for evidence of contaminated waste streams discharging to floor drains, storm system, or catch basins. Key shops to be visited include: (2)(6)(9) - battery shop - corrosion control - engine shop - motor pool - paint shop - plating shop - petroleum, oils, and lubricants (POL) area.
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
Effluent Limitation	
10-42. New and existing electroplating facilities that directly or indirectly discharge less than 38,000 L per day (10,000 gallons (gal) per day) are required to meet specific standards (OEBGD, Chapter 4, Criteria 1(a)(viii)).	Verify that the following standards are met: (2)(9) Pollutant — Daily Maximum (mg/L) — 4-day Average (mg/L) Cyanide, amenable — 5.0 — 2.7 Lead — 0.6 — 0.4 Cadmium — 1.2 — 0.7 Total Toxic Organics — 4.57 — --- (NOTE: See Appendix 10-11 for a list of components of total toxic organics.)
...	...
10-43. New and existing electroplating facilities that directly or indirectly discharge more than 38,000 L per day (10,000 gal per day) are required to meet specific standards (OEBGD, Chapter 4, Criteria 1(a)(ix)).	Verify that the following standards are met: (2)(9) Pollutant — Daily Maximum (mg/L) — 4-day Average (mg/L) Cyanide, total — 1.9 — 1.0 Copper — 4.5 — 2.7 Nickel — 4.1 — 2.6 Chrome — 7.0 — 4.0 Zinc — 4.2 — 2.6 Lead — 0.6 — 0.4 Cadmium — 1.2 — 0.7 Total Metals — 10.5 — 6.8 Total Toxic Organics — 2.13 — ---
...	...
10-44. New and existing facilities that electroplate precious metals and that directly or indirectly discharge 38,000 L per day (10,000 gal per day) or more are required to meet additional standards (OEBGD, Chapter 4, Criteria 1(a)(x)).	Verify that the following standards are met: (2)(9) Pollutant — Daily Maximum (mg/L) — 4-day Average (mg/L) Silver — 1.2 — 0.7
...	...

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COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
10-45. Monitoring of effluent limitations will be done quarterly by industrial dischargers (OEBGD, Chapter 4, Criteria 1(b)).	Verify that monitoring is done quarterly and includes all the appropriate parameters. (2)(9) Verify that samples are collected at the point of discharge prior to any mixing with the receiving wastes. (2)(9) (NOTE: Sampling for TTO can be avoided if the commanding officer determines that no discharge of concentrated toxic organics into the wastewaters has occurred and the facility has implemented a TTO management plan.)

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Appendix 10-1

Drinking Water MCLs for Community Water Systems

INORGANIC CONTAMINANTS

Contaminant	mg/L
Arsenic	0.05
Asbestos[1]	7 million fibers/L
Barium	1.0
Cadmium[1]	0.010
Chromium[1]	0.05
Fluoride[2]	4.0
Mercury[1]	0.002
Nitrate[3] (as N)	10.0
Nitrite[3] (as N)	1.0
Total Nitrate and Nitrite[3] (as N)	10.0
Selenium[1]	0.01
Sodium[4]	
Lead	0.05
Copper	1.3
Silver	0.05 mg/L

1 - MCLs apply to CWS and NTNC systems
2 - Fluoride also has a secondary MCL at 2.0 mg/L. MCL only applies to CWS.
3 - MCLs apply to CWS, NTNC, and TNC systems
4- No MCL established. Monitoring is required so concentration levels can be made available on request.

Appendix 10-1 (continued)

SYNTHETIC ORGANIC CHEMICAL

Contaminant	mg/L	Detection Limit mg/L
1,1-Dichloroethylene	0.007	0.0005
1,1,1-Trichloroethane	0.20	0.0005
1,2-Dichloroethane	0.005	0.0005
1,2-Dichloropropane	0.005	0.0005
2,4-D	0.1	0.0001
2,4,5-TP	0.01	0.0002
Acrylamide	treatment technique 1	
Alachlor	0.002	0.0002
Aldicarb	0.003	0.0005
Aldicarb sulfoxide	0.003	0.0005
Aldicarb sulfone	0.003	0.0008
Atrazine	0.003	0.0001
Benzene	0.006	0.0005
Carbofuran	0.04	0.0009
Carbon tetrachloride	0.005	0.0005
Chlordane	0.002	0.0002
cis-1,2-Dichloroethylene	0.07	0.0005
1,2-Dibromo-3-chloropropane	0.0002	0.00002
Endrin	0.0002	0.00002
Ephydrochlorin	treatment technique 1	
Ethylbenzene	0.7	0.0005
Ethylene dibromide	0.00005	0.00001
Heptachlor	0.0004	0.00004
Heptachlorepoxide	0.0002	0.00002
Lindane	0.0002	0.00002
Methoxychlor	0.04	0.0001
Monochlorobenzene	0.1	0.0005
o-Dichlorobenzene	0.6	0.0005
para-Dichlorobenzene	0.075	0.0005
Pentachlorophenol	0.001	0.00004
Polychlorinated biphenyls	0.0005	0.0001
Styrene	0.1	0.0005
Tetrachloroethylene	0.005	0.0005
Toluene	1.0	0.0005
Toxaphene	0.003	0.001
trans-1,2-Dichloroethylene	0.1	0.0005
Trichloroethylene	0.005	0.0005
Vinyl chloride	0.002	0.0005
Xylenes (total)	10.0	0.0005

Treatment Technique 1 - best available treatment technique relates to polymer addition practices

Appendix 10-2

Inorganics Monitoring Requirements

Contaminant	Groundwater Baseline Requirement[1]	Surface Water Baseline Requirement	Trigger That Increases Monitoring[5]	Waivers
Barium	1 sample/3 yr	Annual sample	> MCL	---
Cadmium	1 sample/3 yr	Annual sample	> MCL	---
Chromium	1 sample/3 yr	Annual sample	> MCL	---
Mercury	1 sample/3 yr	Annual sample	> MCL	---
Selenium	1 sample/3 yr	Annual sample	> MCL	---
Sodium	1 sample/3 yr	Annual sample	---	---
Asbestos	1 sample/9 yr	1 sample/9 yr	> MCL	Yes[2]
Nitrate	Annual sample	Quarterly	> 50% MCL[6]	Yes[3]
Nitrite	Annual sample	Quarterly	> 50% MCL[6]	Yes[4]
Corrosivity[7]	Once	Once	---	---

1 - Samples shall be taken as follows: groundwater systems shall take a minimum of one sample at every entry point to the distribution system that is representative of each well after treatment; surface water systems shall take at least 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 the treatment.

2 - Necessity for analysis is predicated upon a vulnerable assessment conducted by the PWS.

3 - The DOD Executive Agent may reduce repeat sampling frequency of surface water systems to an annual sample if, after 1 yr, the parameter is less than 50 percent of the MCL.

4 - The DOD Executive Agent may reduce repeat sampling frequency to one sample if the parameter is 50 percent of the MCL.

5 - Increased quarterly monitoring requires a minimum of two samples per quarter for groundwater systems and at least four samples per quarter for surface water systems.

6 - Increased quarterly monitoring shall be undertaken for nitrate and nitrite if a sample is less than 50 percent of the MCL.

7 - PWSs shall be analyzed within 1 yr of the effective date of country-specific, final governing standards to determine the corrosivity entering the distribution system.

Appendix 10-3

Recommended Fluoride Concentration at Different Temperatures

Annual Average of Max. Daily Air Temperatures (°F)	Control Limits (mg/L)		
	Lower	Optimum	Upper
50.0 - 53.7	0.9	1.2	1.7
53.8 - 58.3	0.8	1.1	1.5
58.4 - 63.8	0.8	1.0	1.3
63.9 - 70.6	0.7	0.9	1.2
70.7 - 79.2	0.7	0.8	1.0
79.3 - 90.5	0.6	0.7	0.8

Appendix 10-4

Synthetic Organic Chemical Monitoring Requirements

Contaminant	Base Requirement[1]		Trigger for more monitoring[5]	Waivers
	Groundwater	Surface water		
VOCs	Quarterly	Quarterly	> 0.0005 mg/L	Yes[2,3]
Pesticides/ PCBs	4 quarterly samples/3 yr during most likely period for their presence		> Detect-ion limit[4]	Yes[3]

[1] Groundwater systems shall take a minimum of one sample at every entry point that is representative of each well after treatment; surface water systems will take a minimum of one sample at every entry point to the distribution system at a point that is representative of each source after treatment.

[2] Repeat sampling frequency may be reduced to annually after 1 yr of no detection and to every 3 years after three rounds of no detection.

[3] Monitoring frequency may be reduced, if warranted, based on a vulnerability assessment by the PWS.

[4] Repeat sampling frequency may be reduced after one round of no detection; systems greater than 3300 may be reduced to two samples/yr every 3 yr, or systems less than 3300 may be reduced to one sample every 3 yr.

[5] Increased monitoring requires a minimum of two samples per quarter for groundwater systems and at least four samples per quarter for surface water systems.

(NOTE: Compliance is based on an annual running average for each sample point for systems monitoring quarterly or more frequently. For systems monitoring annually or less frequently, compliance is based on a single sample, unless the DOD Executive Agent requests a confirmation sample. A system is out of compliance if any contaminant exceeds the MCL.)

Appendix 10-5

Total Trihalomethane Monitoring Requirements

Population Served by system	Number of Samples per Distribution System	Frequency of Samples	Type of Sample
10,000 or more	4	Quarterly	Treated
Less than 10,000	1	Annually	Treated

NOTES

1. One of the samples must be taken at a location in the distribution system reflecting the maximum residence time of water in the system. The remaining samples shall be taken at representative points in the distribution system. Systems using groundwater sources that add a disinfectant should have one sample analyzed for maximum total trihalomethane potential. Systems that employ surface water sources, in whole or in part, and that add a disinfectant should have one sample analyzed for total trihalomethanes.

2. Compliance is based upon a running yearly average of quarterly samples for systems serving more than 10,000 people. Noncompliance exists if the average exceeds the MCL. For systems serving less than 10,000 people and having a maximum total trihalomethane potential sample exceeding the MCL, a sample for total trihalomethanes shall be analyzed. If the total trihalomethane sample exceeds the MCL, noncompliance results.

Appendix 10-6

Radionuclide MCLs and Monitoring Requirements

MCL Contaminant	MCL, pCi/L
Gross Alpha[1]	15
Combined Radium-226 and 228	5
Gross Beta[2]	50
Strontium-90	8
Tritium	20,000
Radon[3]	300

Monitoring Requirements

For gross alpha activity and radium-226 and radium-228, systems will be tested once every 4 yr. Testing will be conducted using an annual composite of four consecutive quarterly samples or the average of four samples obtained at quarterly intervals at a representative point in the distribution system.

Gross alpha only may be analyzed if activity is less than or equal to 5 pCi/L. Where radium-228 may be present, radium-226 and/or radium-228 analyses should be performed when activity is greater than 2 pCi/L. If the average annual concentration is less than half the maximum contaminant level, analysis of a single sample may be substituted for the quarterly sampling procedure. A system with two or more sources having different concentrations of radioactivity shall monitor source water in addition to water from a free-flowing tap. If the installation introduces a new water source, these contaminants will be monitored within the first year after introduction.

---

[1] Gross alpha activity includes radium-226, but excludes radon and uranium.

[2] Gross beta activity refers to the sum of beta particle and photon activity from man-made radionuclides. If gross beta exceed the MCL, i.e., equals a dose of 4 millirem/yr, the individual components must be determined.

[3] MCL for radon is proposed to be effective in 1995.

Appendix 10-7

Total Coliform Monitoring Frequency

Population Served per Month	Minimum Number of Samples per Month
25 to 1,000	1
1,001 to 2,500	2
2,501 to 3,300	3
3,301 to 4,100	4
4,101 to 4,900	5
4,901 to 5,800	6
5,801 to 6,700	7
6,701 to 7,600	8
7,601 to 8,500	9
8,501 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 10-8

Surface Water Treatment Requirements

1. Unfiltered Systems

a. Systems that use unfiltered surface water or groundwater sources under the direct influence of surface water will analyze the raw water for total coliforms or fecal coliforms at least weekly and for turbidity at least daily for a minimum of 1 yr. If the total coliforms and/or fecal coliforms exceed 100/100 mL and 20/100 mL, respectively, appropriate filtration must be applied. Appropriate filtration must also be applied if turbidity exceeds 1 NTU.

b. Disinfection must achieve at least 99.9 percent inactivation of Giardia lamblia cysts and 99.99 percent inactivation of viruses by meeting applicable CT values.

c. Disinfection systems must have redundant components to ensure uninterrupted disinfection during operational periods.

d. Daily disinfectant residual monitoring immediately after disinfection is required. Disinfectant residual measurements in the distribution system will be made weekly.

e. Water in a distribution system with a heterotrophic bacteria concentration less than or equal to 500/mL, measured as heterotrophic plate count, is considered to have a detectable disinfectant residual.

f. If disinfectant residuals in the distribution system are undetected in more than 5 percent of monthly samples for 2 consecutive months, appropriate filtration must be implemented.

2. Filtered Systems

a. The turbidity of filtered water will be monitored at least daily.

b. The turbidity of filtered water will not exceed 1 NTU in 95 percent of the analyses in a month, with a maximum of 5 NTU.

c. Disinfection requirements are identical to those for unfiltered systems.

Appendix 10-9

Monitoring Requirements for Lead and Copper Water Quality Parameters

Population Served	No. of Sites for Standard Monitoring[1,2]	No. of Sites for Reduced Monitoring[3]	No of Sites for Water Quality Parameters[4]
> 100,000	100	50	25
10,001-100,000	60	30	10
3,301-10,000	40	20	3
501-3,300	20	10	2
101-500	10	5	1
< 100	5	5	1

[1] Monitor every 6 mo for lead and copper.

[2] Sampling sites shall be based on a hierarchal approach. For CWS, priority will be given to: single family residences that contain copper pipe with lead solder installed after 1982, contain lead pipes, or are served by lead service lines; then, structures, including multifamily residences, with the foregoing characteristics; and finally, residences and structures with copper pipe with lead solder installed before 1983. For NTNC systems, sampling sites will consist of structures that contain copper pipe with lead solder installed after 1982, contain lead pipes, and/or are served by lead service lines. First draw samples will be collected from a cold water kitchen or bathroom tap; nonresidential samples will be taken at an interior tap from which water is typically drawn for consumption.

[3] Monitor annually for lead and copper if action levels are met during each of two consecutive 6-mo monitoring periods. Annual sampling will be conducted during the 4 warmest months of the year.

[4] Samples will be representative of water quality throughout the distribution system. Samples will be taken in duplicate for pH, alkalinity, calcium, conductivity or total dissolved solids, and water temperatures to allow a corrosivity determination (via a Langelier saturation index or other appropriate saturation index); additional parameters are orthophosphate when a phosphate inhibitor is used and silica when a silicate inhibitor is used.

Appendix 10-10

Components of Total Toxic Organics
PCB-1016 (Arochlor 1016)
2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

Components of Total Toxic Organics	
Plant Capacity in million gallons per day (MGD)	Monitoring Frequency
0.0 - 0.099	Quarterly
0.1 - 0.99	Monthly
1.0 - 4.99	Weekly
> 5.0	Daily

Appendix 10-11

WASTEWATER

COMPONENTS OF TOTAL TOXIC ORGANICS
Volatile Organics
Acrolein (Propenyl)
Acrylonitrile
Methyl chloride (chloromethane)
Methyl bromide (bromomethane)
Vinyl Chloride (chloroethylene)
Chloroethane
Methylene Chloride (dichloromethane)
1,1-Dichloroethene
1,1-Dichloroethane
1,2-Dichloroethane
1,2-trans-Dichloroethene
Chloroform (trichloromethane)
1,1,1-Trichloroethane
Carbon Tetrachloride (tetrachloromethane)
Bromodichloromethane
1,1,2,2-Tetrachloroethane
1,2-Dichloropropane
1,3-Dichloropropylene (1,3-Dichloropropene)
Trichloroethene
Diromochloromethane
1,1,2-Trichloroethane
Benzene

COMPONENTS OF TOTAL TOXIC ORGANICS (continued)
2-Chloroethyl vinyl ether (mixed)
Bromoform (tribromomethane)
Tetrachloroethene
Toluene
Chlorobenzene
Ethylbenzene
Base/Neutral Extractable Organics
N-nitrosodimethylamine
bis (2-chloroethyl) ether
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,2-Dichlorobenzene
bis (2-chloroisopropyl)-ether
Hexachloroethane
N-nitrosodi-n-propylamine
Nitrobenzene
Isophorone
bis (2-chloroethoxy) methane
1,2,4-trichlorobenzene
Naphthalene
Hexachlorobutadiene
Hexachlorocyclopentadiene
2-Chloronaphthalene
Acenaphthylene
Dimethyl Phthalate
2,6-Dinitrotoluene

COMPONENTS OF TOTAL TOXIC ORGANICS (continued)
Acenaphthene
2,4-Dinitrotoluene
Fluorene
4-Chlorophenyl phenyl ether
Diethyl phthalate
1,2-Diphenylhydrazine
N-nitrosodiphenylamine
4-Bromophenyl phenyl ether
Hexachlorobenzene
Phenanthrene
Anthracene
Di-n-butyl phthalate
Fluoranthene
Pyrene
Benzidine
Butyl benzyl phthalate
1,2-benzoanthracene (benzo (a) anthracene)
Chrysene
3,3-Dichlorobenzidine
bis (2-ethylhexyl) phthalate
Di-n-octyl phthalate
3,4-Benzofluoranthene (benzo (b) fluoranthene)
11,12-Benzofluoranthene (benzo (k) fluoranthene)
Benzo (a) pyrene (3,4-benzopyrene)
Indeno (1,2,3-cd) pyrene (2,3-phenylene pyrene)

COMPONENTS OF TOTAL TOXIC ORGANICS (continued)
1,2,5,6-Dibenzanthracene (dibenezo (a,h) anthracene)
1,12-Benzoperylene (benzo (g,h,i) perylene)
Acid Extractables Organics
2-Chlorophenol
Phenol
2-Nitrophenol
2,4-Dimethylphenol
2,4-Dichlorophenol
4,6-Dinitro-o-cresol
2,4,6-Trichlorphenol
2,4-Dinitrophenol
4-Nitrophenol
p-Chloro-m-cresol
Pentachlorophenol
Pesticides/PCBs
Alpha-Endosulfan
Beta-Endosulfan
Endosulfan sulfate
Alpha-BHC
Beta-BHC
Delta-BHC
Gamma-BHC
4,4-DDT
4,4-DDE (p,p-DDX)
4,4-DDD (p,p-TDE)

COMPONENTS OF TOTAL TOXIC ORGANICS (continued)
Aldrin
Chlordane (technical mixture and metabolites)
Dieldrin
Endrin
Endrin aldehyde
Heptachlor
Heptachlor Epoxide (BHC-hexachlorocyclohexane)
Toxaphene
PCB-1242 (Arochlor 1242)
PCB-1254 (Arochlor 1254)
PCB-1221 (Arochlor 1221)
PCB-1232 (Arochlor 1232)

INSTALLATION:	COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT Worldwide ECAS	DATE:	REVIEWER(S):
STATUS NA C RMA	REVIEWER COMMENTS:		

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (3) Preventive Medicine Officer (6) Director of Logistics (DOL) (9) Chief of Operations and Maintenance (O&M) (14) Wastewater Treatment Plant Supervisor (O&M) (15) Land Management Officer (DEH) (21) Public Affairs Officer (PAO) (22) Staff Judge Advocate

Section 11

Management

SECTION 11

MANAGEMENT

A. Applicability of this Protocol

This protocol applies to all Army facilities. Currently, this section contains protocols for environmental program management activities, including the A-106 Pollution Abatement Plan. (This document is more widely known as the RCS 1383 Report.) The Environmental Program Management protocol is written in response to the Department of Defense (DOD) directives/instructions, and Army regulations (ARs) applicable to the conduct of activities involving these programs. This section is designed to evaluate and examine the interaction within the Environmental Office and the Directorate of Engineering and Housing (DEH), the interface with other Directorates/Installation Activities, and relationships with the applicable Major Army Command (MACOM).

Specific host nation regulations are not included in this protocol.

B. DOD Regulations

- DOD 6050.7, *Environmental Effects Abroad of Major Department of Defense Actions*, implements Executive Order (EO) 12114 which requires taking into account considerations with respect to actions that do significant harm to the environment of places outside the United States.

C. Army Regulations

- AR 200-1, *Environmental Protection and Enhancement*, includes requirements for environmental compliance, auditing, reports, the establishment of Environmental Quality Control Councils (EQCCs) and Technical Review Committees (TRCs), making environmental agreements and regulations on property transactions and construction sites.

- AR 200-2, *Environmental Effects of Army Actions*, addresses Outside Continental United States (OCONUS) issues in para 1-5c, stating that "Worldwide and long-range character of environmental problems will be recognized, and where consistent with national security requirements and U.S. foreign policy, appropriate support will be given to initiatives, resolutions, and programs designed to maximize international cooperation in protecting the quality of the world human environment."

D. Responsibility for Compliance

- Installation Commanders (ICs) and activity and unit commanders are actively involved and in maintain awareness of environmental programs, activities, critical issues, 1383 submissions, Command Operating Budget (COB) environmental entries, and results and updates of the United States ECAS reports (assessment report and corrective action management plan). The IC ensures that other directorates, tenant activities, coordinators and unit commanders, cooperate with the DEH on environmental responsibilities and that proposals for real property transactions concerning installations included in the Installation Restoration Program (IRP) are immediately resported through channels to Headquarters Department of the Army (HQDA).

  The IC also: assigns an on-scene coordinator/remedial project manager for all on-going IRP projects; chairs and conducts Environmental Quality Control Committee meetings on a scheduled periodic basis to maintain community awareness and support critical issues; and conducts initial and follow-up ECAS assessments (ECAS program).

- The DEH prepares and provides input into the Annual Work Plan (AWP), COB, and other budgetary documents.

  The DEH prepares the A-106/RCS 1383 report and provides notices of non-compliance from regulatory agencies to respective MACOM.

- The Public Affairs Office (PAO) maintains the Public Affairs Plan by establishing the necessary support to the DEH and interfacing with the public.
- The Safety Office provides required support for management of hazardous materials (i.e., worker protection guidance, inspection assistance).

- The Preventive Medicine (PVNTMED) Office provides required respiratory and protective support, conducting and maintaining baseline medical surveys. PVNTMED also provides Quality Assurance/Quality Control (QA/QC) on management of pathological wastes.

- The Director of Logistics (DOL) is responsible for compliance and QA/QC on: the Used Solvent Elimination (USE) Program; petroleum, oils, and lubricants (POL) management (new and used materials); hazardous materials tracking to include Material Safety Data Sheets (MSDS); and environmental controls/oversight of maintenance, transportation, and ammunition storage activities.

- The Civilian Personnel Office (CPO) provides personnel active support regarding classification, recruitment, and placement.

- The Director of Resource Management (DRM) provides support and guidance to manpower survey/Schedule X activity in establishing and maintaining required staffing.

E. Key Compliance Definitions

These definitions were obtained from the directives/instructions and ARs listed at the end of each definition. If there is no citation listed for the definition, it has been drawn from the U.S. Code of Federal Regulations (CFR).

- *Affecting* - will or may have an effect.

- *Categorical Exclusions (CXs)* - a category of actions that do not require an Environmental Assessment (EA) or Environmental Impact Statement (EIS) because the Department of Army (DA) has determined that the actions do not have an individual or cumulative effect on the environment (AR 200-2, Glossary).
- *Categorical Exclusion* - in addition to the above definition: a class of actions, defined and approved in accordance with Executive Order (EO) 12114, DOD Directive 6050.7, and service regulations, that normally do not, individually or cumulatively, do harm to the environment and that require no further environmental review beyond appropriate documentation of the decision to apply the exclusion (OEBGD, Chapter 17, Definitions).

- *Defense Environmental Restoration Account (DERA)* - the DOD funding program for the IRP (AR 200-1, para 9-4).

- *Effects* - effects are either direct or indirect. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are altered in time or farther removed in distance, but are still reasonably foreseeable.

- *Environment* - the natural and physical environment, excluding social, economic, and other environments (OEBGD, Chapter 17, Definitions).

- *Environmental Assessment (EA)* - a concise analysis to assist DOD components in determining if there is potential for significant environmental impacts associated with the proposed action and if an environmental impact statement is required (OEBGD, Chapter 17, Definitions).

- *Environmental Impact Statement (EIS)* - an analysis of the likely environmental consequences of a proposal for a major Federal action that is to be considered by DOD components in deciding whether to approve the proposal. It includes a review of the affected environment, a description of any adverse

environmental effects that cannot be avoided if the proposal is adopted, alternatives to the proposed action (including a no-action alternative), actions taken to avoid environmental harm or otherwise to better the environment, and environmental considerations and actions by the other participating nations, bodies, or organizations (OEBGD, Chapter 17, Definitions).

- *Environmental Review* - an analysis of the likely environmental consequences of the action that is to be considered by DOD components in the decision making process. It includes a review of the affected environment, actions taken to avoid environmental harm or otherwise better the environment, and environmental considerations and actions by the other participating nations, bodies, or organizations. Environmental reviews will be prepared either unilaterally by the DOD or in conjunction with another U.S. agency, but *preparation does not include foreign government participation* (OEBGD, Chapter 17, Definitions).

- *Environmental Studies* - bilateral or multilateral environmental studies, relevant or related to the proposed action, conducted by the United States and one or more foreign nations or by an international body or organization in which the United States is a member or participant (AR 200-2, Appendix H, para C(1)(a)(1)).

- *Environmental Study* - an analysis of the likely environmental consequences of the action that is to be considered by DOD components in the decision making process. It includes a review of the affected environment, actions taken to avoid environmental harm or otherwise better the environment, and environmental considerations and actions by the other participating nations, bodies, or organizations. Environmental studies are prepared by the United States in conjunction with one or more foreign nations, or by an international body or organization in which the United States is a member or participant (OEBGD, Chapter 17, Definitions).

- *Environmental Reviews* - concise reviews of the local environmental issues prepared unilaterally by the United States (AR 200-2, Appendix H, para c(1)(a)(2)).

- *Feasibility Study* - within the IRP (or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)), the description of remedial action alternatives and the means for development, evaluation, and selection (AR 200-1, para 9-7f(2).

- *Federal Action* - an action that is implemented or funded directly by the U.S. Government. It does not include actions in which the U.S. participates in an advisory, information gathering, representational, or diplomatic capacity, nor does it include actions taken by a foreign government in a foreign country in

which the United States is a beneficiary of the action or actions in which foreign governments use funds derived indirectly from the United States (OEBGD, Chapter 17, Definitions).

- *Foreign Nation* - any geographic area (land, water, or airspace) that is under the jurisdiction of one or more foreign governments; any area under military occupation by the United States alone or jointly with any other foreign government; and any area that is the responsibility of an international organization of governments. Foreign nation includes contiguous zone., exclusive economic zones, and fisheries zones (OEBGD, Chapter 17, Definitions).

- *Global Commons* - geographical areas outside the jurisdiction of any nation. They include the oceans outside territorial limits and Antarctica. They do not include contiguous zones and fisheries zones of foreign nations (AR 200-2, Glossary, Section II).

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

- *Major Action* - an action, involving substantial expenditures of time, money, and resources, that affects the environment on a large geographic scale or has substantial environmental effects on a more limited geographic area. A major action is substantially different or a significant departure from other actions previously analyzed, with respect to environmental considerations, and approved, with which the action under consideration may be associated. A deployment of units, ships, aircraft, or mobile military equipment that does not involve significant changes to the physical environment and that does not require additional support facilities that would significantly change the physical environment is not a major action for purposes of these criteria (OEBGD, Chapter 17, Definitions).

- *Negative Decision* - a record of decision not to prepare environmental analyses (OEBGD, Chapter 17, Definitions).

- *Remedial Action (RA)* - the actual construction or implementation phase that follows the remedial design of the selected cleanup alternative at a site (AR 200-1, para 9-7f(6)).

- *Remedial Investigation (RI)* - the IRP related process to determine the nature and extent of the problem posed by a release or threatened release (AR 200-1, para 9-7f(1)(c)).

- *Scoping* - a process that occurs when the planning for an Army project or action indicates a need for the preparation of an EIS. Scoping determines the scope of issues to be addressed in the EIS and identifies the significant issues related to the proposed action. The parties identify the range of actions, alternatives, and impacts to consider in the EIS (AR 200-2, para 2-6d).

- *Site Inspection* - a technical phase that follows a preliminary assessment and is designed to collect more extensive information on a hazardous waste site. The information is used to score the site with the Hazard Ranking System to determine if response action is needed (AR 200-1, para 9-7f(1)).

MANAGEMENT

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
All installations	11-1 through 11-9	(1)(2)(21)(22)(31)(34)
Environmental agreements	11-10	(1)(2)(22)
A-106 pollution abatement plans/ RCS 1383 report	11-11 through 11-15	(1)(2)(21)
Construction sites	11-16	(1)(13)
Real property transactions	11-17 through 11-19	(1)(2)
Managing environmental effects	11-20 through 11-22	(1)(2)
Documentation	11-23 and 11-24	(2)
Categorical exclusions	11-25	(2)

(a) CONTACT/LOCATION CODE:

(1) Directorate of Engineering and Housing (DEH)
(2) Environmental Coordinator (EC)
(5) Fire Department
(13) Engineering, Plans, and Services (EP&S)
(21) Public Affairs Office (PAO)
(22) Staff Judge Advocate (SJA)
(26) Master Planner (DEH)
(31) Directorate of Personnel and Community Activities (DPCA)
(34) Civilian Personnel Office (CPO)

MANAGEMENT

GUIDANCE FOR WORKSHEET USERS

	REFER TO WORKSHEET ITEMS:	CONTACT THESE PERSONS OR GROUPS:(a)
EISs	11-26 through 11-28	(1)(2)(26)
IRP programs	11-29 through 11-33	(1)(2)(5)(13)(21)

(a) CONTACT/LOCATION CODE:

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MANAGEMENT

Records to Review

- Record of previous environmental compliance assessments
- Environmental agreements
- A-106 pollution abatement plan/RCS 1383 reports
- Preliminary Assessment Screening (PAS)
- Annual Work Plan (Environmental Impact)
- COB
- Unfinanced Requirements Report (UFR)
- Spill logs

People to Interview

- Directorate of Engineering and Housing (DEH)
- Environmental Coordinator (EC)
- Fire Department
- Engineering, Plans, and Services (EP&S)
- Public Affairs Office (PAO)
- Staff Judge Advocate (SJA)
- Master Planner (DEH)
- Directorate of Personnel and Community Activities (DPCA))
- Civilian Personnel Office (CPO)

COMPLIANCE CATEGORY: MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ALL INSTALLATIONS	
11-1. Determine actions or changes since previous review (GMP).	Determine if noncompliance issues have been resolved by inspecting previous Environmental Program Management review. (1)(2)(22)
...	...
11-2. Copies of all relevant DOD directives/ instructions, ARs, and guidance documents on management issues should be maintained at the installation (GMP).	Verify that copies of the following regulations are maintained on the installation: (1)(2) - *Overseas Environmental Baseline Guidance Document (OEBGD)*, October 1992. - DOD Directive 5100.50, *Protection and Enhancement of Environmental Quality*, 24 May 1973. - DOD Directive 6050.7, *Environmental Effect Abroad of Major Department of Defense Actions*, 31 March 1979. - DOD Directive 6050.16, DOD Policy for Establishing and Implementing Environmental Standards at Overseas Installations, 20 September 1991. - AR 200-1, *Environmental Protection and Enhancement*, 23 May 1990. - AR 200-2, *Environmental Effects of Army Actions* 23, January 1989. - AR 405-90, *Disposal of Real Estate*, 15 May 1985 - AR 415-15, *Military Construction, Army (MCA) Program Development.* - AR 420-10, *Management of Installation and Directorates of Engineering and Housing*, 3 August 1987. - AR 420-17, *Real Property and Resource Management*, 13 December 1976. - EO 12088, *Federal Compliance with Pollution Standards.*
...	...
11-3. Installations are required to comply with applicable MACOM regulations and substantive host nation regulations concerning environmental management (AR 200-1, para 1-40).	Verify that the installation is complying with MACOM and host nation requirements as appropriate. Issues that are typically regulated include: (1)(2)(22) - procurement of goods (recycled material content) - notices of noncompliance - restoration of contaminated sites - environmental agreements.
...	...

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COMPLIANCE CATEGORY: MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
11-4. Each installation is required to request sufficient funding to perform the required environmental compliance activities (AR 200-1).	Verify that adequate/current Schedule Xs are prepared and submitted to DRM/ Director of Planning, Training, and Mobilization Section (DPTMSEC) (Force Development) to obtain necessary staffing to support environmental program requirements. (1)(2)(31) Verify that adequate/current job descriptions and grade classifications are prepared and submitted to the CPO for classification and recruitment to obtain required personnel staffing and supporting grades. (1)(2)(31)(34) Examine the number of environmental staff versus the number of environmental subprograms the office must manage. If the ratio of personnel to programs exceeds 1:3, potential exists for staffing deficiencies. (1)(2)(31)
...	...
11-5. Each installation must have an Environmental Quality Control Committee (EQCC) (AR 200-1, para 12-3a through 12-13c).	Verify that the installation has an EQCC comprised of the following people: (1)(2)(21) - Installation or Community Commander, or a designated representative, who will serve as chairperson - Director of Engineering and Housing (DEH), who will act as the executive secretary - Environmental officer - Director of each major staff section of the installation or community - Representatives from the following offices or functions: - PVNTMED -safety - Surety -internal control - Resource management -supply - DRMO -DOL - PAO -DPCA - Army and Air Force Exchange Service (AAFES) -Inspector General - DPTMSEC (Aviation, Range Control) -Tenant Unit Commanders -SJA - Agency Sponsor Commanders -Activity commanders - Satellite Commanders -Subcommunity Commanders - Major U.S. Army Reserve Command (MUSARC) representatives - Any others deemed appropriate by the IC (i.e., U.S. Army National Guard (ARNG), U.S. Army Reserve (USAR) -- Mobilization and Training Equipment Site (MATES), Union Training Equipment Site (UTES), Command Support Maintenance Shop (CSMS), SMA, etc.). Verify that the EQCC meets monthly or as often as considered necessary by the chairperson. (1)(2)
...	...

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COMPLIANCE CATEGORY: MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
11-6. Installation personnel involved in environmental affairs should receive the necessary environmental training (GMP).	Check with Environmental Officer (EO) to determine what training is being conducted, including: (1)(2) - types of personnel who should receive training: - - environmental staff members - command staff members - troops (garrison units, AT-USAR/ARNG) - - types of training: - specialist certification training - respirator training. Verify that troop units incorporate environmental training in the routine training plans. (2)
...	...
11-7. Environmental compliance assessments will be undertaken in accordance with Army regulation (AR 200-1, para 12-8).	Verify that the installation authorizes an external assessment not less frequently than once every 4 year (yr). (1)(2) Verify that the installation develops a corrective action plan to correct the deficiencies identified in the external assessment and that the plan is updated annually (see Appendix 11-1). (1)(2) Verify that the installation performs an internal assessment at the midpoint between external assessments. Internal assessments will be conducted per this manual. (1)(2)(22) (NOTE: Internal assessments may be conducted by in-house staff or contracted.)
...	...
11-8. Noncompliance and violations must be reported to proper offices (AR 200-1, para 12-7a).	Verify that the Commander of any installation, activity, or unit who receives notice of noncompliance or violation, or is or will be unable to comply with applicable regulations, notifies his/her MACOM immediately, by telephone. (1)(21)(22)
...	...
11-9. The Inspector General (IG) and the Internal Control Section of DRM should be proactively involved in environmental affairs (GMP).	Verify that EC is familiar with the IG's and Internal Control Section environmental activities. (2) Determine if the IG (during routine visits) is assisting the EO with elevating the environmental awareness by following up on other activities the installation may have initiated to correct noncompliance issues. (2)
...	...

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COMPLIANCE CATEGORY: MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
ENVIRONMENTAL AGREEMENTS	
11-10. Environmental agreements will be prepared according to regulation (AR 200-1, para 12-6c through 12-6e).	Verify that draft environmental agreements contain procedures for schedule modification and dispute resolution. (2)(22) Verify that draft agreements are forwarded through MACOM to HQDA (DAJA-EL) Washington, DC 20310-2210, for review and coordination. Draft agreements must be accompanied by: (1)(2) - a brief description of the problem, the proposed action, and the parties to the agreement - a map delineating the location of each site addressed in the agreement - a funding plan that would ensure that the compliance schedule could be met. Verify that public review and comment are provided for where applicable. (1)(2)
...	...
A-106 POLLUTION ABATEMENT PLAN AND RCS 1383 REPORT	
11-11. Determine actions or changes since previous review of the A-106 Pollution Abatement Plan/RCS 1383 Report (GMP).	Obtain a copy of previous report and determine if noncompliance issues have been resolved. (1)(2)
...	...
11-12. The installation should have copies of all relevant Federal, DOD, and Army regulations on the A-106 Pollution Abatement Plan/RCS 1383 Report (GMP).	Determine if copies of AR 200-1, *Environmental Protection Enhancement*, are maintained and kept current at the installation. (1)(2)
...	...
11-13. The A-106/RCS 1383 Report process must be incorporated into the Army planning, programming, and budgeting system (AR 200-1 para 12-11b(1)(d)).	Obtain copies of the previous year's two A-106/RCS 1383 reports. (1)(21) Verify that 1383 exhibits are properly classified in accordance with 1383 guidance. (1)(21)
...	...

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COMPLIANCE CATEGORY: MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
11-14. The A-106/RCS 1383 Report must be completed in an accurate manner (AR 200-1, para 12-11b).	Determine if the installation has available a current HQDA Policy and Guidance for completion of the RCS 1383 report. (1)(2) Verify that members of the installation have received training on the DB 1383 software. (2) Verify that the installation uses appropriate sources and resources for establishing project cost estimates, pollution categories, and law/regulation codes, e.g., Corps of Engineers (COE) field offices, MACOM, relevant regulations. (2)
...	...
11-15. Semiannual reports must be prepared at the installation or activity level (AR 200-1, para 12-11b(2)(c) and 12-11b(2)(d)).	Determine if the MACOM submits the report by 15 May and 15 November of each year. (1)
...	...
CONSTRUCTION SITES	
11-16. Environmental surveys will be conducted before the selection of construction sites (AR 200-1, para 12-14).	Verify that surveys are conducted in accordance with AR 415-15 before site selection. (1) Verify that the Environmental Office is part of the project review process for new construction and renovation (plans/specifications) to ensure environmental compliance (i.e., work orders; in-house; architect/engineer (A/E) designs; Military Construction Army (MCA) projects). (13)
...	...

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COMPLIANCE CATEGORY: MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
REAL PROPERTY TRANSACTIONS	
11-17. A comprehensive inventory and evaluation of existing environmental conditions will be conducted on all real property before any transaction (AR 200-1, para 12-5).	Verify that a Preliminary Assessment Screening (PAS) is prepared for all real property transfers and other transactions. The PAS will consider: (1)(2) - areas of cultural, historical, or archaeological significance - threatened or endangered species - environmentally sensitive areas - DOD, DA, Federal, regional, state, and local environmental regulatory compliance - any permit, permit discontinuance, or closure requirements - properties or structures with known or potential environmental contamination (asbestos, radon, unexploded ordnance, hazardous or toxic materials/substances/wastes) - existing land use plans, IRP reports, and other environmental documentation. Verify that the PAS is reviewed for adequacy by the Army office that reviews associated REC, EA, or EIS. (1)(2) Verify that if the PAS discloses a release or suspected release of contaminants, the U.S. Army Toxic and Hazardous Materials Agency is notified for consideration under the National Contingency Plan (NCP). (1)(2) (NOTE: Non-Army parties will be requested to perform the PAS for transactions they have initiated.) (NOTE: If the transaction qualifies for a CX, a separate PAS will be prepared before the record of environmental consideration and will be included in the REC for review.)
...	...
11-18. Proper notification of the contract of sale and associated covenants is the responsibility of the Army proponent (AR 200-1, para 12-5).	Verify that the proponent provides notice to the disposal agency, or other Federal agency if the transaction is subject to a transfer agreement, of the contract of sale and covenants as required by AR 200-1. (1)
...	...

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COMPLIANCE CATEGORY: MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

11-19. The EO should maintain good rapport with the supporting MACOM Environmental Office, and provide environmental support to other tenants on the installation (GMP).	Determine if the EO has a good working relationship with the respective MACOM EO. (1)(2)
	
	- the EO should consult with the MACOM EO on such matters as:
	  - spill reporting
	  - noncompliance reporting
	  - information updates
	  - funding requirements
	- MACOM, in turn, should provide necessary environmental support, guidance and resources to the installation.
	
	Verify that the EO at the installation provides the necessary environmental support to the satellite facilities on: (1)(2)
	
	- training
	- permits
	- underground storage tank (UST) program
	- used oil collection
	- used solvent collection
	- hazardous waste/hazardous material support
	- DRMO contract support
	- spill support/notification
	- environmental project programming.

...	...
MANAGING ENVIRONMENTAL EFFECTS	
11-20. The installation must perform a number of activities in the management of environmental effects (AR 200-2 para 1-4k and EO 12114, para 2-4).	Verify that the installation: (1)(2) - monitors proposed actions and programs within its command - assures that appropriate environmental documentation is prepared and forwarded to the appropriate proponent - initiates the preparation of necessary environmental documentation and assesses the environmental consequences of proposed programs and projects - coordinates appropriate environmental documents and public affairs initiatives with MACOM, HQDA agencies, and the Army EC - assists in the review of environmental documents prepared by the DOD and other Army agencies, as requested.
...	...
11-21. Army units are required to integrate environmental review concurrently with other planning and decision-making actions (AR 200-2, para 2-6a).	Verify that installation organizations have developed some method to ensure they consult with the EC to determine environmental review and documentation requirements for actions they plan or perform. (2) Verify that action proponents have documented compliance with environmental review requirements for actions they plan or perform. (2)
...	...

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COMPLIANCE CATEGORY: MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
11-22. The EC should have access to installation and tenant planning processes via attendance at Master Planning Board meetings, Range Control schedules, or other means suitable to the particular installation and its mission (GMP).	Verify that the EC has the listed access and information. (2)
...	...
DOCUMENTATION	
11-23. Installations are required to analyze and document major Federal actions that have the potential to do significant harm to the environment of the global commons (OEBGD, Chapter 17, Criteria 1 and 4; AR 200-2, para 8-2 and Appendix G, paras A through C).	(NOTE: See Appendix 11-2 for a quick summary of documentation requirements.) Verify that no action was taken that did significant harm or limited the choice of a reasonable alternative until the completion of the documentation process. (2) (NOTE: In the case of an emergency where the actions are taken that do significant harm to the environment, the DOD component concerned must consult with the Assistant Secretary of Defense.) (NOTE: Environmental documents may be combined with other documents to reduce duplication. Both the use of collective statements and tiering is acceptable.) Determine if the DOD provided a CX for the action, thereby negating the need for an EIS. (2) Verify that an EA was done to determine if an EIS was needed. (2)
...	...

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COMPLIANCE CATEGORY: MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
11-24. The process of preparing and documenting environmental impact statements for major Federal actions that could do significant harm to the environment of the global commons must meet specific standards (AR 200-2, para 8-2 and Appendix G, para D).	Verify that a draft statement was prepared first and made available for comment to the U.S. public. (2) Verify that the Department of State, the Council on Environmental Quality, and other interested Federal agencies were informed of the availability of the draft. (2) Verify that the final statement dealt with comments received on the draft and was made available to the U.S. public. (2) Verify that statements include the following: (2) - a section considering the purpose of and the need for the proposed action - a section on the environmental consequences of the proposed action and reasonable alternatives - a section providing a succinct description of the environment of the global commons affected by the proposed action and reasonable alternatives - a section analyzing, in comparative form, the environmental effects on the global commons of the proposed action and reasonable alternatives. Verify that if substantial changes to the proposed action were made or significant new information or circumstances developed, a supplemental statement was added to the draft or final statement. (2) (NOTE: Public hearings are not required.)
...	...

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COMPLIANCE CATEGORY: MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**

CATEGORICAL EXCLUSIONS
 	
11-25. Specific analysis and documentation procedures are required when an installation performs certain types of major Federal actions that do significant harm to the environment of a foreign nation or a protected global resource (OEBGD, Chapter 17, Criteria 1 and 2; AR 200-2, para 8-2 and Appendix H, para A through C).
	Verify that analysis and documentation were performed for the following types of major Federal actions: (2)
	
	- those that significantly harm the environment of a foreign nation that is not involved in the action
	- those that are determined to cause significant harm to the environment because they provide to that nation:
	  - a product or involve a physical project that produces a principal product, emission, or effluent, that is prohibited or strictly regulated in the United States because its toxic effects on the environment create a serious public health risk
	  - a physical project that is prohibited or strictly regulated in the United States by Federal law to protect the environment against radioactive substances. Examples include asbestos, vinyl chloride, acrylonitrile, isocyanates, polychlorinated biphenyls, mercury, beryllium, arsenic, cadmium, and benzene
	- those outside the United States that significantly harm natural or ecological resources of global importance designated for protection by the President, or, in case of such a resource, protected by international agreement binding on the United States, designated for protection by the Secretary of State.
	
	Determine if any of the actions occurring at the installation have been granted a CX by the DOD. (2)
	
	Verify that either an environmental study or an environmental review was prepared. (2)
	
	(NOTE: The following are exempt from these requirements:
	- actions that DOD components determine do not do significant harm to the environment outside the United States or to a designated resource of global importance
	- actions taken by the President
	- actions taken by or pursuant to the direction of the President or a cabinet officer in the course of armed conflict
	- actions taken by or pursuant to the direction of the President or a cabinet officer when the national security or national interest is involved
	- activities of the intelligence component utilized by the Secretary of Defense
	- decisions and actions of the Office of the Assistant Secretary of Defense (International Security Affairs), the Defense Security Assistance Agency, and other responsible offices within the DOD components with respect to arms transfers to foreign nations
	- actions for disaster and emergency relief
	- actions involving export licenses, permits, or export approvals, other than those relating to nuclear activities
	- actions relating to nuclear activities and nuclear material, except actions providing a nuclear production or utilization facility or a nuclear waste management facility to a foreign nation.
	Additional exemptions may be granted on a case-by-case basis.)

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COMPLIANCE CATEGORY: MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
EISs	
11-26. Document decisions that determine that EISs and/or EAs are not required. (OEBGD, Chapter 17, Criteria 3 and 4).	Verify that decisions to not produce an EIS or do an EA are documented. (2)
...	...
11-27. Environmental studies are required to meet specific standards (AR 200-2, para 8-2 and Appendix H, para D).	Verify that the environmental study includes the following: (1)(2)(26) - review of the affected environment - predicted effect of the action - significant actions taken to avoid environmental harm or otherwise better the environment - significant environmental consideration and actions by other participating nations, bodies, or organizations. Verify that all environmental studies are done as cooperative action, not as a unilateral action by the United States. (1)(2)(26) (NOTE: Environmental studies may be best used in relation to actions that provide strictly regulated or prohibited products or projects to a foreign nation and actions that affect a protected global resource.) Verify that the environmental study was made available to the Department of State, the Council on Environmental Quality, and other interested Federal agencies. (1)(2)(26) Verify that, upon request, the study was made available to the U.S. public. (1)(2)(26) (NOTE: The specific content, procedures, and distribution of the environmental study in the international context are to be considered flexible.) Verify that if, after consultation with the concerned foreign governments and organizations, a decision is made not to do an environmental study, a written record of the decision is on file. (1)(2)(26)
...	...

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COMPLIANCE CATEGORY: MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
11-28. Environmental reviews are required to contain specific information (AR 200-2, para 8-2 and Appendix H, para E).	Verify that environmental reviews contain the following information: (2) - a statement of the action to be taken, including its timetable, physical features, general operating plan, and other similar broad-gauge descriptive factors - identification of the important environmental issues involved - the aspects of the actions taken or to be taken by the DOD component that ameliorate or minimize the impact on the environment - the actions known to have been taken or planned by the government of any participating and affected foreign nations that will affect environmental considerations (NOTE: An environmental review is prepared by the environmental components concerned either unilaterally or in conjunction with another Federal agency.) Verify that if a decision was made not to prepare an environmental agreement, a record of that decision and the basis for the decision is on file. (2) Verify that the environmental review was made available to the Department of State, the Council on Environmental Quality, and other interested Federal agencies. (2) Verify that, upon request, the review was made available to the U.S. public. (2) (NOTE: The specific content, procedures, and distribution of the environmental review in the international context are to be considered flexible.)
...	...
IRP PROGRAMS	
11-29. Screening for past use of hazardous substances and the potential for contamination will be conducted at all major Army installations and subinstallations, and other properties controlled by the Army (AR 200-1, para 9-7a).	Determine if the installation has been screened for past use of hazardous substances. (2)
...	...

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COMPLIANCE CATEGORY: MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
11-30. Each installation with an ongoing IRP program must have a TRC (AR 200-1, para 9-10).	Determine if the installation has formed and implemented a TRC. (1)(2)(13) Verify that the committee includes representatives from local regulatory agencies and the public. (1)(2)(13) Verify that the TRC holds public meetings quarterly or at identified milestones. (1)(2)(13)
...	...
11-31. In all environmental restoration activities, a preliminary assessment/site investigation (PA/SI) is required (AR 200-1, para 9-7f(1)).	Verify that in the IRP, for the property over which the installation commander or other Army entity has control, an inventory of all the real property has been done. (2) Determine if, at the start of the preliminary assessment, a program of full coordination with regulatory agencies was established. (1) Verify that if a site investigation is required, an environmental analysis in the form of an EA, EIS, or CX was prepared. (1)(2) Verify that when an SI leads to a remedial investigation/feasibility study (RI/FS) that it is conducted in accordance with the provisions in AR 200-1 and that it was started within 6 months (mo) after the installation was added to the NPL. (1)(2) Verify that a Record of Decision (ROD) is signed by the IC after the publication of the FS report. (1)(2) Verify that within 15 mo after the completion of the FS and the ROD, a selected alternative has been designed and substantial, continuous on-site activity is underway. (1)(2)
...	...
11-32. Installations with IRP sites must appoint a remedial project manager (Executive Order 12580; National Contingency Plan).	Determine if the IC has appointed a remedial project manager for all IRP sites, (2)
...	...

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COMPLIANCE CATEGORY: MANAGEMENT Worldwide ECAS	
REGULATORY REQUIREMENTS:	**REVIEWER CHECKS:**
11-33. The installation must keep the public informed about and involved with the IRP projects (AR 200-1, para 9-11).	Verify that the public is informed through the PAO, in a timely news release, about: (2)(21) - the discovery of releases or threatened releases - the magnitude of any threat to public health and the environment associated with any such release or threatened release - proposed response actions with respect to any release or threatened release - the initiation of each distinct phase of a response action - the findings and availability of documents for review - the discovery of off-site migration of contaminants - the signing of site-specific agreements with regulatory agencies. Verify that all proposed public statements are coordinated with the IC, OSC/RPM, SJA, PAO, MACOM, PAO, and environmental staffs of the installation, and any other signatories of an IAG if applicable. (2) Verify that public participation activities begin with the initiation of the RI/FS, if not earlier. (2)(5) Verify that a community relations and response plan is prepared for any site on the NPL. (2)(5) Verify that public comment is solicited for 45 days on any draft FS. (2)(5) Verify that the installation makes prompt notification to applicable authorities of the following: (2)(5) - the discovery of releases or threatened releases of hazardous substances - the magnitude of any threat to public health and the environment that may be associated with any such release or threatened release - the proposed response actions with respect to any release or threatened release - the initiation of each distinct phase of a response action.

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Appendix 11-1

Definitions of U.S. Environmental Protection Agency (USEPA) Class and Compliance Status of Projects

CLASS I

Project Assessment = HIGH
Compliance Status: CMPA, INOV, ESDP
USEPA Class Number 1

Project to correct noncompliance with host nation environmental laws and/or SOFA; Final Governing Standards.

CLASS II

Compliance Status: ESDF, PSDF
USEPA Class Number 2

Project to meet a compliance deadline effective on a future date within the current budgetary year.

CLASS III

Compliance Status: ESRO, ESRE, ESDL, OTHR
USEPA Class Number 3

Projects to correct deviations from Army Regulations, DOD Directives, OEBGD, and other good management practices that lack associated statutory authority.

Appendix 11-2

ENVIRONMENTAL EFFECTS ABROAD

ANALYSES OF OVERSEAS ACTIONS	
ACTION	**ANALYSES REQUIRED**
a. Major DOD actions significantly affecting the environment of the geographic areas outside the jurisdiction of any nation (i.e., outside any economic zone, fishery zone, territorial sea, or other claim of national sovereignty). Antarctica is considered outside the jurisdiction of any nation.	Environmental Impact Statement
b. Major DOD actions significantly affecting the environment of a foreign nation, that is not participating with the United States and not otherwise involved in the action.	Environmental Review or Environmental Study
c. Major DOD actions significantly affecting the environment of a foreign nation in which the actions provide, to that nation, a product or physical project producing a principal product or an emission or effluent that is prohibited or strictly regulated by Federal law in the United States because its toxic effects on the environment create a serious public health risk.	Environmental Review or Environmental Study
d. Major DOD actions significantly affecting the environment of a foreign nation in which the actions provide, to that nation, a physical project that is prohibited or strictly regulated by Federal law in the United States to protect against radioactive substances.	Environmental Review or Environmental Study
e. Major DOD actions that significantly affect natural or ecological resources of global importance designated for protection by the President or, in the case of such a resource protected by international agreement binding on the United States, by the Secretary of State. Recommendations to the President in such cases will be accompanied by the views of the Council on Environmental Quality and the Secretary of State.	Environmental Impact Statement, Environmental Review, or Environmental Study
f. Major DOD actions affecting only the environment of a participating or otherwise involved foreign nation and that do not involve emissions, effluents that are prohibited or strictly regulated by Federal law in the United States, or resources of global importance that have been designated for protection.	No formal document required.

INSTALLATION:	COMPLIANCE CATEGORY: MANAGEMENT Worldwide ECAS	DATE:	REVIEWER(S):

STATUS NA C RMA	REVIEWER COMMENTS:

(1) Directorate of Engineering and Housing (DEH) (2) Environmental Coordinator (EC) (5) Fire Department (13) Engineering, Plans, and Services (EP&S) (21) Public Affairs Officer (PAO) (22) Staff Judge Advocate (26) Master Planner (DEH) (31) Directorate of Personnel and Community Activities (DPCA) (34) Civilian Personnel Office (CPO)