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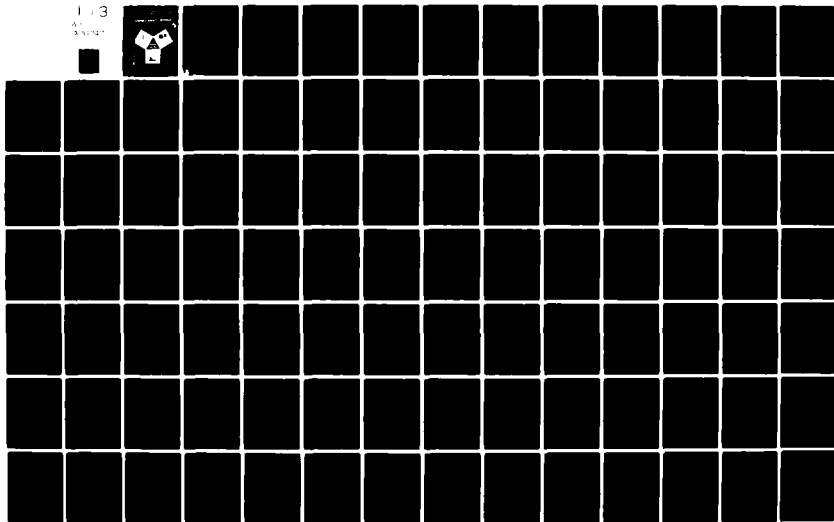
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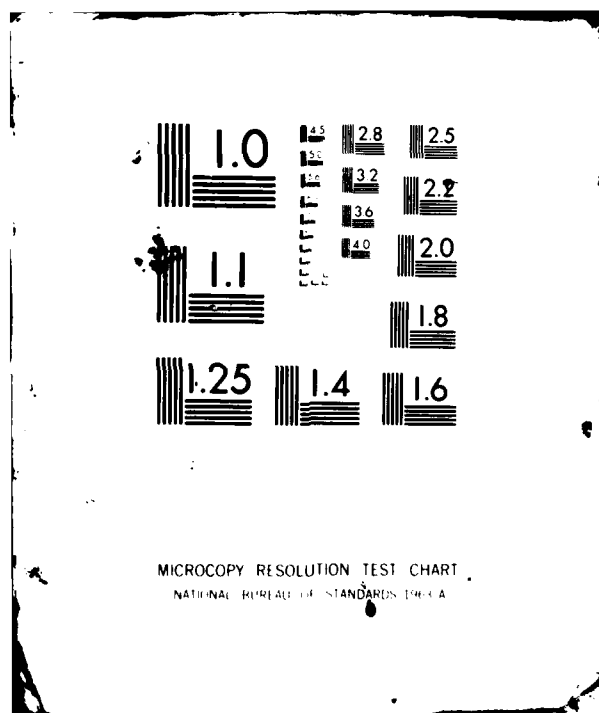
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PRE CONFERENCE HAZARDOUS MATERIALS WORKSHOP

WEST/EAST COAST SAFETY CONFERENCE

3 - 4 OCTOBER/31 OCTOBER - 1 NOVEMBER 1981
1981

BY

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LEGISLATION/REGULATION OF HAZARDOUS MATERIALS

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OPNAV INST	8020.11A	OP 3347, U.S.N. Ordnance Safety Precautions
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NAVSUP INST	6240.2A	Oil Pollution Control and Abatement at Bulk Fuel Activities
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NAVFAC INST	10365.2B	Information on Restrictions Regarding Use of Lead Based Paints
NAVFAC INST	11015.6B	Natural Resources, Soil and Water Conservation
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OP 5	Ammo and Explosives Ashore
OP 2165	Navy Transportation Safety Handbook
OP 3199	Handling and Storage of Liquid Propellents
Mil-Stats (Navy)	Transportation of Hazardous Materials
NFPA Standards	National Fire Protection Association-Fire Codes
NAVSEA 0901-LP-001-XXXX	Naval Ships Technical Manual
OPNAVNOTE 6240, Sec 730791	20 February 80

DEPARTMENT OF THE NAVY
Office of the Chief of Naval Operations
Washington, D.C. 20350

Canc frp: Feb 81
OPNAVNOTE 6240
Ser 45/730791
20 February 1980

OPNAV NOTICE 6240

To: All Ships and Stations (less Marine Corps field addressees not having Navy personnel attached)

Subj: Navy Hazardous Materials Environmental Management Program

Ref: (a) Resource Conservation and Recovery Act (PL 94-580) (42 USC 6901-6987)
(b) Clean Water Act (PL 92-500)
(c) U.S. Navy Regulations
(d) OPNAVINST 6240.3E

Encl: (1) Navy Hazardous Materials Management Guide, NESO 20.2-024A, October 1979

1. Purpose. To implement requirements of references (a) and (b) relative to hazardous wastes (HW) and hazardous materials (HM) at Navy activities in the 50 states, the District of Columbia, Commonwealth of Puerto Rico, Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Marianas Islands.

2. Definitions

a. Hazardous material (HM). Any material, which because of its quantity, concentration or physical, chemical or infectious characteristics may pose a substantial hazard to human health or the environment when released or spilled to the environment. In the case of ships, this includes hazardous materials turned into store (HMTIS).

b. Hazardous waste (HW). Any discarded material, liquid, solid or gaseous, which meets the definition of a HM and/or is designated a hazardous waste by the Environmental Protection Agency (EPA) or state hazardous material control authority.

c. Hazardous material turned into store (HMTIS). Excess material no longer needed by a ship that is classifiable as HM or HW.

3. Background

a. In the past few years there have been reports in the media of harm to property and public health caused by improper handling of HM, and disposal of HW. A recent example is the Love Canal environmental emergency in western New York State where chemical wastes buried 30 years have required the relocation of families and abandonment of homes, and resulted in suspected health problems including birth defects and miscarriages.

b. Several environmental laws now have comprehensive requirements for the control of HM and HW. EPA has published proposed regulations to implement these statutory requirements. Final EPA regulations are not yet published; however, it is known that the regulations will contain certain essential elements required by the laws. In view of the short time frames allowed for development of adequate programs, the Navy's extensive involvement, the need to protect people from HM, and the high level of public concern, it is prudent to develop a Navy program for the control of HM and HW.

4. Discussion

a. Overall Navy Program. The overall Navy program for environmental control of HM and HW at Navy shore activities in accordance with applicable laws and regulations consists of four essential elements:

(1) HW management plan. A plan applicable to facilities that receive, generate, store, transport, treat or dispose of HW.

(2) HM Spill Prevention Control and Countermeasures (SPCC) Plan. A plan to prevent the spill of HM.

(3) HM Spill Contingency Plan. A plan for containing and cleaning up spills of HM.

(4) Navy Assessment and Control of Installation Pollutants (NACIP). Management of abandoned, inactive HW burial sites, i.e., determining the character, location and environmental effects of abandoned sites.

(5) This notice establishes specific policies and requirements relative to subparagraphs 4a(1), (2) and (3). The program for the element in subparagraph 4a(4) will be initiated by a separate OPNAV directive as legislative and regulatory requirements are developed in this area.

b. **HM management survey.** The first step in developing a HM program at a Navy facility is a survey of the facility for such materials, their characteristics and current practices for management of the HM. This information is then the basic input for development of plans indicated in subparagraphs 4(c), (d) and (e), and for Federal, state or local information requirements. Information and procedures for making HM management surveys are provided in enclosure (1).

c. **HW Management Plan**

(1) In accordance with Subtitle C of reference (a), the Environmental Protection Agency has published seven proposed regulations which in totality, will regulate HW from generation through disposal. The regulations will include:

(a) Notification of local states or EPA regional offices of Navy generation, storage, treatment or disposal of HW.

(b) Obtaining local, state or EPA permits for operation of facilities for the storage, treatment or disposal of HW.

(c) Reporting and recordkeeping.

(d) Use of a "manifest system" to trace HW from generation through disposal.

(2) The HW management plan for a facility will identify HW generated and handled by the facility, determine applicable Federal, state or local requirements, and evaluate present practices in light of these requirements. Details on preparation of the plans are provided in enclosure (1).

(3) Reference (a) provides that a state may develop its own HW program. Navy activities are subject to such state programs as well as any EPA requirements; however, if a state program has been approved by EPA, compliance is required with only the state program.

d. **HM spill prevention control and countermeasure plan (SPCC).** In accordance with Sections 304e and 311(j) (1) (C) of reference (b), EPA has published a proposed regulation (40 CFR 151) that requires development and implementation of hazardous materials SPCC plans for most Navy activities which handle HM. The plans must be developed as prescribed in the regulation, certified by a registered professional engineer and implemented within a specific period. Further details are provided in enclosure (1).

e. **Hazardous materials spill contingency plans.** The National Oil and Hazardous Substances Pollution Contingency Plan 40 CFR 1510 requires that Federal agencies develop emergency plans and procedures for dealing with accidental spills. Oil-spill contingency plans have already been developed at applicable activities. It is now necessary to develop spill contingency plans for HM. Enclosure (1) provides information for development of such plans.

f. **Ships transfer of HMTIS, and HW to shore facilities.** In instances where Navy ships transfer HMTIS or HW ashore, responsibility for proper management is transferred to the receiving facility; however, it is necessary that ships' forces use proper containers for HMTIS or HW, and properly label the containers.

5. **Responsibilities**

a. The Chief of Naval Material (CNM) is responsible for:

(1) Designating Public Works Centers (PWC) as coordinators for area-wide actions to comply with Federal, state and local requirements regarding the identification, generation, storage, transportation, treatment and disposal of HW.

(2) Advising, through Naval Facilities Engineering Command (NAVFACENGCOM) Engineering Field

Divisions (EFDs), activities and commands of applicable Federal, state and local requirements regarding hazardous materials environmental management.

(3) Providing, through NAVFACENGCOM, technical assistance in complying with HM/HW environmental and transportation requirements and in developing environmental plans for HW management, HM SPCC, and HM spill contingencies.

b. Major claimants are responsible for insuring that their ships and shore activities:

(1) Comply with applicable Federal, state and local requirements regarding the identification, generation, storage, transportation, treatment and disposal of HW.

(2) Develop and implement HM SPCC plans.

(3) Develop HM spill contingency plans.

c. Senior officers present are responsible for:

(1) Designating, in accordance with paragraph 0903 of reference (c), coordinators for area-wide actions to comply with Federal, state and local requirements regarding the identification, generation, storage, transportation, treatment and disposal of HW where Public Work Centers do not exist.

(2) Coordinating the development of HM spill contingency plans.

6. Action

a. The CNM shall:

(1) Designate, through NAVFAC, PWCs to receive HW and to provide central area-wide storage facilities and contract disposal for ship and shore generated HW.

(2) Maintain and update the Navy "Hazardous Materials Management Guide", enclosure (1), to assist Navy shore activities in surveying and managing HM in accordance with applicable Federal, state and local laws and regulations.

(3) Through NAVFAC EFD's, provide technical assistance to PWCs, coordinators and Navy shore activities in determining applicable Federal, state, and local laws and regulations, inventorying HM, developing HW management plans, HM SPCC plans, and spill contingency plans. Typically, such assistance may include:

(a) providing appropriate briefings concerning applicable regulations and requirements, timing (deadlines) of requirements and disposal methods.

(b) Providing advice on the accomplishment of HM surveys and management and submittal of information to Federal, state or local agencies.

(4) Develop a "Hazardous Waste Management Plan for Navy Ships" including the following elements:

(a) Survey of expected HMTIS and HW generation (identification, quantity per unit of time and remarks relative to variability of flow) from each type and class of Navy ship. The survey shall be developed utilizing existing information, without substantial query to the fleet, and shall be distributed to the fleet and appropriate shoreside facilities by 1 July 1980.

(b) Listing of satisfactory containers for each HMTIS and HW generated aboard ship.

(c) Information on the proper labeling and description of each hazardous HMTIS and HW.

The overall Plan shall be distributed to the fleet by 1 June 1981.

(5) Develop a program for the acquisition, stocking, and supply of containers necessary for the transport and storage of HMTIS and HW such that shipboard inventories of empty containers are minimized.

(6) Investigate current procedures and processes ashore and aboard ship which conduct HMTIS operations or generate HW to ascertain whether changes in such procedures and processes can

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20 February 1980

efficiently reduce, recycle, or eliminate HW generation, and implement such changes where warranted.

b. Senior officers present shall:

(1) Designate a coordinator to assume area-wide HW storage and/or disposal, including contracting responsibilities, where PWCs do not exist and an area wide approach is appropriate.

(2) In cooperation with PWCs, assist in coordinating Navy compliance with area-wide HM and HW requirements.

(3) With the assistance of NAVFACENGCOM EFDs, coordinate and implement local HM spill contingency plans.

c. Commanders and commanding officers of Navy shore activities which generate, store, transport, treat or dispose of HM or HW as listed in Appendix B of enclosure (1), shall:

(1) Designate an activity focal point to coordinate activity HM management programs.

(2) Determine, evaluate, and comply with those Federal, state, and local laws and regulations that are applicable to HW at the Navy activity.

(3) Using the HW listings in Appendices B and C of enclosure (1) as a minimum, and adding those wastes as required by Federal, state and local HW regulations, survey the activity's HM and develop a HW management plan. The plan should incorporate existing activity HW programs and any area wide responsibilities assigned by area coordinators through subparagraph 6a. The "Navy Hazardous Materials Management Guide" (enclosure (1)), provides guidance for accomplishing the survey and plan. The plan shall be reviewed by the cognizant NAVFAC EFD prior to finalization. The HM survey shall be completed by 1 June 1980. The HW plan shall be completed by 1 October 1980.

(4) Through the Navy-designated lead activity with area-wide storage and disposal responsibilities dispose of excess or unusable HM found to be in

storage during the HM survey. Such disposal must be in an environmentally safe manner and in accordance with existing Federal, state and local HW requirements.

(5) Submit survey data to EPA, state or local agencies as appropriate when required, and in the format required. Such submittals shall be made via the cognizant NAVFAC EFD.

(6) Identify SPCC facility and equipment deficiencies in cooperation with cognizant EFDs and report deficiencies and funding requirements in the existing Navy Pollution Control Reporting System administered by COMNAVFACENGCOM in accordance with Chapter 2 of reference (d).

(7) In cooperation with the cognizant EFDs, identify spill equipment deficiencies to the area coordinator designated in subparagraph 6b (1) for consolidation of area-wide deficiencies and subsequent reporting of funding requirements in the Navy Pollution Control Reporting System.

(8) Provide copies of HM survey, HW management plans, hazardous materials SPCC plans and spill contingency plans to cognizant NAVFAC EFD's, activity major claimant, Naval Construction Battalion Center, Port Hueneme, CA (Code 25), and the area coordinator.

(9) Request technical assistance, as required, from cognizant NAVFAC EFD's in carrying out required actions.

(10) Budget and fund the operation and maintenance of facilities and equipment necessary to handle, store, transport, treat and dispose of HW in accordance with applicable Federal, state and local requirements and implement hazardous materials SPCC plans and spill contingency plans.

d. Commanders and commanding officers of shore activities assigned to receive HMTIS and HW from ships and other shore activities shall:

(1) Provide accessible facilities to receive the HMTIS and HW and store it safely, in accordance

with applicable EPA and/or state regulations, until the materials are disposed of.

(2) Provide for disposal of HMTIS or HW in accordance with applicable EPA and/or state regulations and local disposal instructions.

a. Commanding officers of Navy ships shall:

(1) Designate an officer or petty officer to be responsible for proper handling of ships HMTIS and HW.

(2) Transfer HW to the PWC or HMTIS to the shore activity designated by the area commander to receive and dispose of HW; transfer HMTIS in accordance with instructions for handling HMTIS.

(3) Insure that HMTIS and HW are segregated from each other, properly containerized and labeled to identify the specific material.

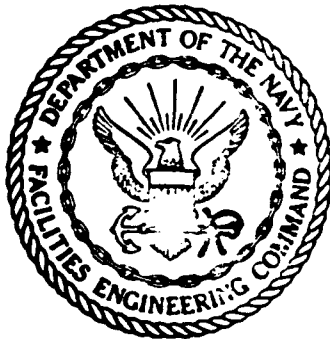
f. Fleet and Type Commanders, as appropriate, shall reimburse shore activities receiving ships HMTIS and HW for expenses incurred in handling, storage, and disposal of the material.

7. Cancellation Contingency. The contents of this notice will be incorporated in reference (d) at the next update.

R. M. GHORMLEY
Assistant Deputy Chief of
Naval Operations (Logistics)

Distribution:
SNDL Parts 1 and 2

OPNAVNOTE 6240
20 February 1980



NAVY ENVIRONMENTAL SUPPORT OFFICE
Naval Construction Battalion Center
Port Hueneme, California 93043

October 1979

NAVY HAZARDOUS MATERIALS MANAGEMENT GUIDE

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FOREWORD

Proper management of hazardous materials will be mandated by a series of Federal, state, and local rules and regulations. State regulations will become especially stringent in the near future in response to Federal pressures. It is the intent of Congress and the policy of the President (Executive Order 12088) that naval activities comply with these requirements to the same extent as any other entity or person.

As part of the Navy Hazardous Materials Management Program, this document provides guidance to naval shore activities for expanding their controls on hazardous materials in order to protect the environment and comply with all applicable requirements.

Comments and suggested changes for incorporation into future editions of the guide are invited. They should be addressed to the Commanding Officer, Code 2512, Naval Construction Battalion Center, Port Hueneme, CA 93043.



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SECTION I

INTRODUCTION

A. Purpose

As part of the Navy Hazardous Materials Management Program, this publication provides guidance to naval shore activities for expanding their controls on hazardous materials management in order to protect the environment. Federal, state, and local rules and regulations are being enacted which will mandate environmental safeguards with respect to hazardous materials management. It is the intent of Congress and the policy of the President (Executive Order 12088) that naval activities comply with these requirements to the same extent as any other entity or person.

This guide is designed to aid an activity in developing the following plans:

- Hazardous Waste Management Plan
- Hazardous Materials Spill Prevention Control and Countermeasures Plan
- Hazardous Materials Spill Contingency Plan

The primary information on which to base these plans is obtained by performing the Hazardous Materials Management Survey. Guidance on performing this survey is provided in section II.

B. Terminology

For the purpose of this guide, any substance that cannot legally be disposed of in a normal sanitary landfill or into a refuse incinerator designed to handle municipal type refuse or cannot be discharged into a sanitary sewerage system is considered a hazardous waste. This guide is not intended to cover certain hazardous materials such as radioactive wastes. Other possible exceptions will be treated on a case-by-case basis.

Any hazardous material can become a waste after having served its intended purpose, after exceeding its shelf life, by becoming contaminated, or by having been spilled. However, hazardous materials that have served a primary purpose and/or are excess to their primary user may have a secondary use. Such recyclable materials, though "excess" or "waste" to one organization, are not considered waste for the purpose of this guide if their disposition is to a secondary user.

By elimination, a hazardous waste is a non-reusable material that must be treated and/or disposed of in a specially designed facility that meets the regulatory requirements of the Resource Conservation and Recovery Act (RCRA) of 1976 (PL 94-580). It might be noted that sludges generated from treatment facilities may also be hazardous wastes.

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C. Background

Navy shore activities have seen recent environmental rules and regulations significantly alter their method of operation. Associated with these increasingly stringent environmental requirements have been rising operating costs, most notably for wastewater treatment and control of air emissions. Costs for refuse disposal have also risen with the elimination of open dumps and the establishment of sanitary landfilling practices.

Soon, the management of hazardous materials (most notably, waste) will undergo similar, if not more dramatic, alterations. It is estimated that Navy ships and shore activities in the United States generate 19 million gallons of liquid hazardous waste and 35 million pounds of hazardous waste solids every year. These wastes are generated at virtually every facility that operates industrial processes or health-related services. Pending government regulations will place a heavy burden on all activities to establish and maintain acceptable management procedures resulting in environmental compliance.

D. Compliance Requirements

Proper management of hazardous materials is mandated by a series of Federal, state, and local regulations. State regulations will become especially stringent in the near future in response to Federal pressures. These hazardous waste regulations are expected to virtually duplicate the equivalent Federal regulations issued under RCRA. A brief summary of applicable Federal laws and regulations is presented below:

1. Hazardous Waste Management.

Hazardous wastes will be controlled from generation to disposal by a series of regulations to be promulgated under RCRA. These regulations will:

- a. Require permits for hazardous waste storage, treatment, and disposal facilities.
- b. Create a manifest system to track wastes from generation to disposal.
- c. Provide standards for the transportation, storage, treatment, and disposal of hazardous wastes.
- d. Establish the generator as the responsible party for ensuring regulatory compliance from generation to disposal.
- e. Authorize states to administer their own hazardous waste programs in lieu of a Federal program.

Promulgation of the Federal regulations is expected by the beginning of calendar year 1980. Thereafter, the activity will have 90 days (i.e., April 1980 if promulgation is in January) to notify the state/EPA of hazardous waste operations such as generation, transportation, storage, treatment, and disposal. The notification will include the best information available to the activity at the time, including types and quantities of hazardous wastes, if known; the

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hazardous waste inventory should be completed before notification. Within 180 days after promulgation (i.e., about July 1980), the activity must apply to the state/EPA for storage, treatment, and disposal site permits. The Hazardous Waste Management Plan should be completed within the same time frame as the permit applications.

2. Hazardous Materials Spills.

Two notable regulations regarding hazardous materials have been written under the Clean Water Act of 1977. These are 40 CFR 116, 117, Hazardous Substances; and 40 CFR 151, Hazardous Substances Pollution Prevention. The first set of regulations (40 CFR 116, 117) designates 299 hazardous materials, indicates reportable quantities of these substances when spilled, and assesses penalties for spills. A list of these substances appears in Appendix B. The second regulation (40 CFR 151), currently proposed in 43FR 39276 of 1 September 1978, will require the development of hazardous materials Spill Prevention Control and Countermeasures (SPCC) plans (see section IV) for facilities subject to NPDES permitting requirements. It is anticipated that additional regulations will extend the SPCC requirement to virtually all domestic Navy activities/complexes.

The SPCC plan is basically oriented towards the prevention of hazardous materials spills. However, 40 CFR 151 also requires spill emergency planning which should be incorporated into the Spill Contingency Plan (see section V). This particular plan should be coordinated with Naval District contingency plans (prepared in compliance with 40 CFR 1510, National Oil and Hazardous Substances Pollution Contingency Plan).

Once 40 CFR 151 is promulgated, a specific timetable for development of the hazardous materials SPCC plan and the associated Spill Contingency Plan will be in effect. The deadline for preparation of the plans will be related to the modification or issuance of the facility's NPDES permit. As stated in the regulation, "the SPCC plan shall be prepared within 6 months of the modification or issuance of an NPDES permit for the facility and shall be fully implemented as soon as possible but not later than 1 year after the modification or issuance of the permit." The proposed regulation requires new facilities to have an SPCC plan prepared before facility operations begin and to fully implement the plan's recommendations within 6 months thereafter. It should be noted that the regulation's deadlines are subject to extension on a case-by-case basis if they are found to be unrealistic.

3. Other Related Hazardous Materials Laws and Regulations.

- a. Best Management Practices (Proposed 40 CFR 125 amendments in 43 FR 39282 of 1 September 1978).

Under this proposed regulation, NPDES-permitted facilities will be required to develop Best Management Practices (BMP) plans to prevent the release of hazardous pollutants to surface waters. The BMP plans will be engineering plans containing treatment requirements, O&M procedures, scheduling, prohibitions, and other management practices to control site runoff, spills, sludge/waste disposal, and drainage from material storage areas. Most of these concerns will be addressed in the three plans described in this guide.

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b. Toxic Substances Control Act (PL 94-459).

Hazardous materials uses will be controlled by regulations to be promulgated under the Toxic Substances Control Act. The act has two main goals. The first is to acquire sufficient information to identify and evaluate potential hazards from chemical substances; the second is to regulate the production, distribution, use, and disposal of these substances, where necessary. The regulations governing use and disposal of these chemicals will probably have the most impact on Navy operations and must be coordinated with hazardous waste regulations promulgated under RCRA. A prime example of a specific chemical regulation is the stringent control of polychlorinated biphenyls (PCBs).

c. Department of Transportation Regulations (49 CFR 170-177).

These Department of Transportation (DOT) regulations require that hazardous materials be properly packaged, containerized, labeled, and transported. DOT regulations concerning the proper intrastate and interstate shipment of hazardous materials will be closely coordinated with hazardous waste regulations promulgated under RCRA.

d. Occupational Safety and Health Act of 1970 (PL 91-596).

The Occupational Safety and Health Act (OSHA) specifies worker health standards within the workplace. OSHA standards also prescribe safety equipment, handling procedures, monitoring, recordkeeping, and safe exposure limits for hazardous materials.

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SECTION II

HAZARDOUS MATERIALS MANAGEMENT SURVEY

A. Survey Overview

The Hazardous Materials Management Survey is specifically designed to aid the activity in complying with Federal and state hazardous materials regulations. The survey will compile information on hazardous materials characteristics (e.g., quantities, types, locations, generation rates) and current activity management practices. This information will be evaluated in the light of applicable regulations, and the following plans shall be developed:

- Hazardous Waste Management Plan (see section III).
- Spill Prevention Control and Countermeasures (SPCC) Plan (see section IV).
- Spill Contingency Plan (see section V).

B. Pre-Survey Meeting

The activity commanding officer or an appointed representative should convene a meeting to discuss the impending survey. All activity organizations responsible for hazardous materials/waste management (e.g., Safety, Supply, Public Works, DPDO), as well as major waste generators, should be represented at the meeting. It is recommended that an Engineering Field Division (EFD) representative be invited. The following points should be discussed at the meeting:

- Need for the survey.
- Elements of the survey and development of the plans.
- Appointment of the Activity Coordinator who will coordinate the survey and plan development/implementation.
- Designation of a standing Hazardous Materials Management Committee (directly reportable to the Commanding Officer) to assist the Activity Coordinator, oversee the implementation of the plans' recommendations, and monitor other hazardous materials matters, as deemed appropriate.

C. Survey Information

Specific information will be collected during the Hazardous Materials Management Survey to prepare the three plans. Required information/investigations are described below (also see survey checklist in appendix A):

1. State/Local Regulations.

Since the survey is compliance-oriented, the state/local hazardous materials regulations affecting the activity, should be carefully reviewed. Items of particular interest include:

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- a. Definition of "hazardous" as used by the state/locality, along with a list of wastes, if available.
- b. Hauling requirements and licensing.
- c. Permit requirements for hazardous waste facilities (i.e., storage, treatment, and disposal).
- d. Manifest forms used by state/locality.
- e. Spill regulations.
- f. Special assistance available from state/local personnel.

The EFD can provide assistance in evaluating the impact of state/local and Federal hazardous materials regulations at the activity.

2. List of Hazardous Materials.

In order to gauge the size and complexity of hazardous materials usage at the activity, a list of procured hazardous items should be obtained from the Supply Department. This may be accomplished by obtaining an extract of materials procured under the Federal Supply Classes (four digits which appear within the National Stock Number) known to contain hazardous items. A list of these Federal Supply Classes is provided in Appendix B, along with descriptions of the materials within each class.

When the hazardous materials list has been developed, it can be used in the following ways: (1) as a valuable clue to the kinds of hazardous wastes generated at the activity, and (2) as basic information on which to base the SPCC and Spill Contingency Plans. These two plans must address the 299 hazardous substances regulated by 40 CFR 116, 117 (see the list in Appendix B). This means that, before developing the spill plans, the list of hazardous materials ordered by the activity should be checked against the list of regulated substances. More details are presented in sections IV and V.

3. Hazardous Waste Inventory.

To properly assess the nature and magnitude of hazardous waste problems, the activity must develop a waste inventory. This inventory should be as complete as possible. It should be compiled with the knowledge that regulatory agencies may soon request this information. It is expected that each state will develop a list of wastes that will be considered hazardous. This list should be consulted while conducting the waste inventory. A list of hazardous wastes commonly found at Navy activities is provided in appendix C.

A specific format for compiling inventory information is given in table 1. This format should be used by the activity except when an alternate state form is required. As a minimum, the hazardous waste inventory should contain the following information:

- a. Hazardous waste description.
- b. Generation rate.

Table 1. Hazardous Waste Inventory

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- Samples of kinds of storage
- 55-gal drums on pallets over soil
- Small containers on concrete
- Containers inside sub-standard building
- Drums inside adequate shelter
- Storage tank under pavement

any area with an accumulation of hazardous wastes constitutes a significant risk.

- Toxic
- Corrosive
- Reactive
- Ignitable

Description should include common/chemical name and other appropriate details (e.g., concentration, military specification, stock number, pesticide registration). Do not include radioactive material.

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- c. Generation point.
- d. Locations where the waste is stored, the quantity stored, and normal storage time.
- e. Treatment/reclamation of the waste.
- f. Hauling of the hazardous waste.
- g. Disposal site employed for the waste.

4. Hazardous Waste Storage, Treatment, and Disposal Sites.

The activity must investigate all hazardous waste storage, treatment, and disposal sites. These sites must incorporate sufficient safeguards to prevent the introduction of any hazardous pollutants to the environment. At many activities, the only on-base hazardous sites will be for storage of wastes.

The ultimate test of a hazardous waste site is whether it meets the qualification for receiving and complying with a state/local permit. Such permits will be required in the near future as discussed previously. In advance of this permitting procedure, hazardous waste sites should be judged in terms of the latest Federal/state regulatory standards, coupled with sound engineering practices.

5. Prevention of Hazardous Materials Spills.

The best managed systems of every description will occasionally have accidents. This is quite true of hazardous materials systems which will sometimes suffer spills. The consequences of hazardous materials spills can be so extreme that great precautions must be taken to prevent them. The use of secondary containment structures to catch released liquids is one important preventive system.

Preventing hazardous materials spills from entering the environment is the philosophy behind the SPCC plan. The development of an effective SPCC plan requires a thorough investigation of all areas with a potential for spills. After these investigations, projects and equipment will be recommended to lessen the chances of a spill and to contain spills if they do occur. The possibility of major failures or accidents must be considered; the direction, rate of flow, and the total quantity of hazardous materials that could be discharged should be predicted.

A variety of engineering techniques are available to control and contain hazardous discharges before they enter the environment. These include:

- Secondary containment such as dikes, berms, retaining walls, impounding basins, diversion ponds, retention ponds.
- Protecting storage piles from the weather using roofs or covers.

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After compiling the list of hazardous materials in section II C 2, the activity should thoroughly investigate the following on-base locations (with special emphasis on waterfront operations):

- a. Liquid storage areas.
- b. Raw material storage areas (other than liquid).
- c. Plantsite runoff areas.
- d. Truck and railcar-liquid loading and unloading areas.
- e. In-plant transfer, process, and materials handling areas.

The proposed regulation 40 CFR 151 discusses specific items that should appear in the SPCC plan. A detailed discussion of these items is presented in section IV. It might be noted that preparation of an SPCC plan will bring the activity into substantial compliance with the best management practices provisions of the proposed amendments to 40 CFR 125.

6. Current Hazardous Waste Management.

Very specific hazardous waste data will be compiled during the survey. After this information has been collected, the activity should develop a general overview of on-base hazardous waste management. One technique for evaluating hazardous waste management is to construct a flowchart to track hazardous wastes from generation through intermediate processes to disposal. The flowchart should include hauling and transfer operations. In addition, organizational responsibilities in the management scheme should be outlined. A flowchart, containing all these elements, appears in figure 1 for the fictitious activity, Naval Shipyard Typical.

Once this flowchart has been completed, the obvious faults of the management scheme should be noted; these faults can be related to noncompliance with regulations or operational inefficiencies. With an eye on applicable hazardous waste regulations, the activity can modify/revamp the management system. One important concept is to centralize the management of hazardous wastes. The activity must designate one person who has responsibility to dispose of or arrange disposal of every hazardous waste generated at the activity, including ship hazardous wastes. The system will not work if certain "hot potato" wastes are allowed to backlog at the activity.

7. Spill Response Capability.

Prompt action is required in spill emergencies to contain and clean up the spill. It must be recognized that containment and cleanup will sometimes be difficult and will require advance planning.

The activity should assess its ability to respond to spill emergencies with special emphasis on the 299 regulated substances. It must be determined which in-house organization(s) has responsibility for such emergencies (e.g., Fire Department, Explosive-Ordnance Disposal forces, Disaster Preparedness units, oil spill response crews) and whether they are effectively trained and equipped to respond.

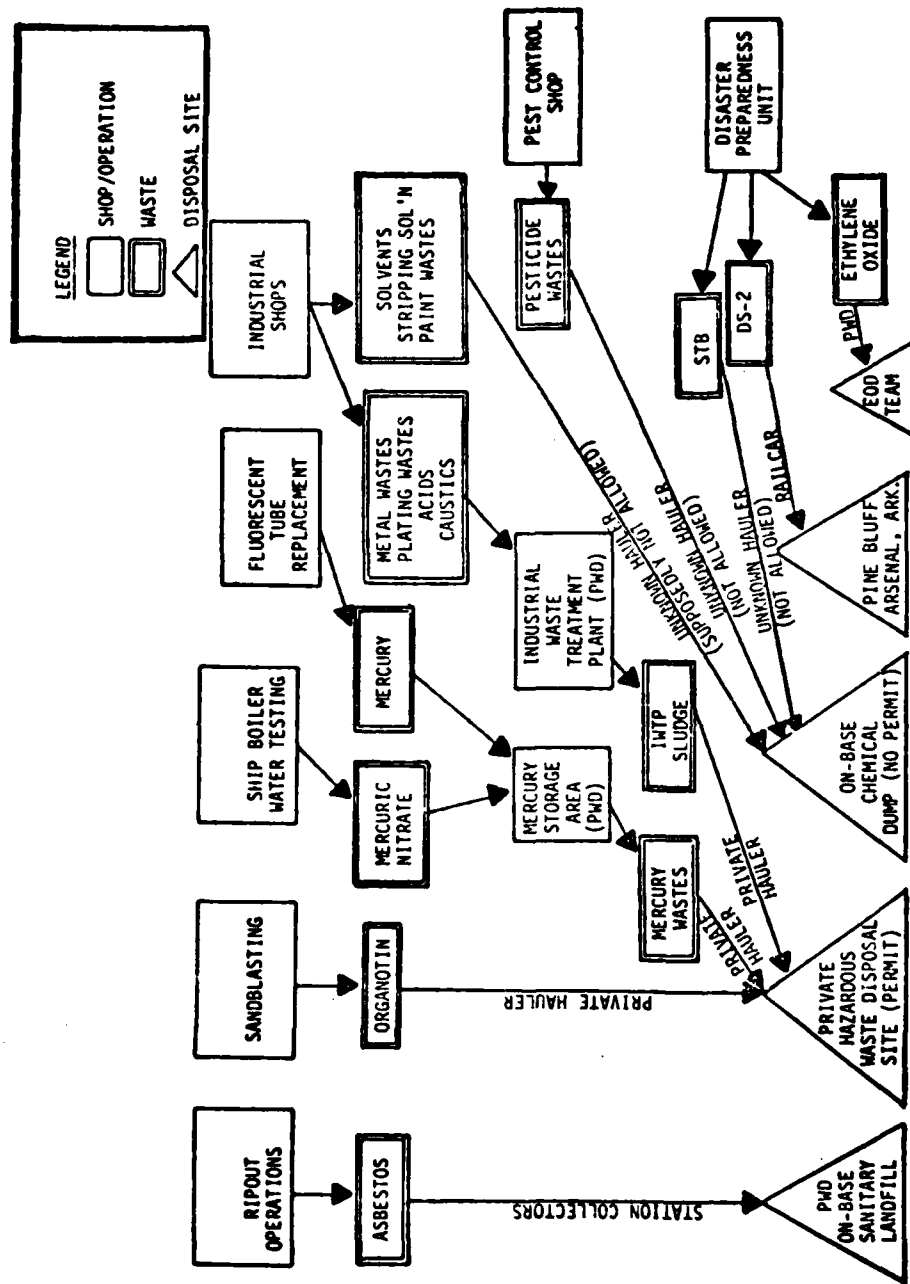


Figure 1

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This investigation will lead to the development of the activity's hazardous materials Spill Contingency Plan. The activity must ensure that its plan is compatible with Area Coordinator's Contingency Plans.

8. In-House Expertise.

As part of the survey, available in-house expertise on hazardous materials matters should be evaluated. This evaluation should concentrate on activity organizations/personnel with knowledge in chemical matters, health/safety/environmental considerations, and emergency response capability. Such additional information as in-house hauling capabilities, contracting knowledge, etc., may also be desired.

The activity may want to form a Hazardous Materials Management Committee, if such a body does not exist, composed of representatives from organizations with hazardous materials expertise. This committee could be given such tasks/responsibilities as:

- Reviewing the purchase of hazardous materials with emphasis on conservation, recycling, and the use of alternate materials.
- Making hazardous materials management recommendations related to health, safety, or environmental considerations.
- Assisting the On-Scene Coordinator in spill emergencies.
- Reviewing management of hazardous wastes.
- Continually updating the plans and recommending implementation actions.

Activity organizations with possible hazardous materials expertise include the Fire, Safety, Supply, Fuel Departments; Public Works; Defense Property Disposal Office; EOD and Disaster Preparedness teams; and Industrial Hygiene personnel. The cognizant Engineering Field Division can advise the activity on hazardous materials expertise available within the Navy and DOD.

9. Civilian Alternatives.

It is expected that the civilian community will greatly expand its hazardous materials management capabilities in the coming years despite the apparent severity of applicable regulations. In terms of hazardous waste, the activity can expect civilian hauling and disposal operations to be developed. With these options available to an activity, it may be inadvisable to establish Navy haulers or on-base disposal sites, especially in view of the hazards involved, potentially unfavorable economics, and the complexities of permit requirements.

Therefore, the activity should thoroughly explore civilian hauling and disposal options and seriously consider their use. However, it should be remembered that the generator is responsible for the disposition of his wastes. Care should be taken to ensure that the haulers and disposal sites used by the activity have been properly licensed or permitted.

The activity should also be aware of civilian spill response crews, in case of a large-scale hazardous materials emergency. In general, small spills should be handled in-house.

SECTION III

HAZARDOUS WASTE MANAGEMENT PLAN

A. Objectives

One of the plans to be prepared from information compiled during the Hazardous Materials Management Survey is the Hazardous Waste Management Plan. This plan is specifically aimed at activity compliance with RCRA/state hazardous waste regulations; as explained in section I D 1, these regulations will control all aspects of hazardous waste management from generation to disposal.

The Hazardous Waste Management Plan will have two objectives:

- Elimination of poor environmental practices (i.e., storage, treatment, disposal sites; hauling).
- Establishment of management practices designed to promote the smooth flow of wastes from generation to permitted disposal.

B. Applicable Survey Elements

The following results of the Hazardous Materials Management Survey will be used in the development of the Hazardous Waste Management Plan:

- State/local hazardous waste regulations and applicable regulatory agencies.
- Inventory of the activity's hazardous wastes and generation rates.
- Investigation of the hazardous waste storage, treatment, and disposal sites used by the activity to assess their environmental adequacy.
- Overall assessment of the current hazardous waste management system at the activity (i.e., generation, storage, treatment, hauling, and disposal), along with the responsible organizations.
- Evaluation of in-house/DOD expertise available to the activity for various aspects of hazardous waste management.
- Civilian alternatives available to the activity, especially in terms of hazardous waste hauling and disposal.

C. Contents of the Plan

The Hazardous Waste Management Plan will have a twofold purpose: to clean up poor environmental practices and to develop a sound management system. As mentioned in section III B, the survey will uncover poor practices in terms of storage, treatment, and disposal of wastes at the activity. The plan should specifically address modifications required to bring these practices into full regulatory compliance. It should be remembered that activities will be required to obtain state hazardous waste facility permits for storage, treatment, and disposal sites; this may necessitate the closure of some of these sites.

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As part of the survey (see section II C 6), a flowchart of the current hazardous waste system was recommended to reveal poor management practices. The results of this evaluation should be presented in the Hazardous Waste Management Plan. The plan will provide a detailed description of a new or modified hazardous waste management system that emphasizes regulatory compliance and operational efficiency. The system should be described from waste generation through intermediate processes to ultimate disposal. In presenting the new management scheme, the plan will emphasize the following points: (1) an activity representative who will accept all hazardous waste for disposal, thereby preventing backlogs, (2) centralized storage and reclamation facilities that will be required at the activity, along with design criteria to ensure that the sites can receive Federal and state permits, (3) haulers to transport the hazardous wastes, emphasizing civilian contractors, (4) available disposal sites to receive the hazardous wastes, again concentrating on civilian alternatives (as opposed to an on-base site).

The Hazardous Waste Management Plan should be organized in the following manner:

- a. Introductory statements including authority for the plan (OPNAVNOTE, regulations).
 - b. Responsibilities for various personnel/organizations in terms of collection, transfer, disposal, and overall program coordination.
 - c. Hazardous wastes generated at the activity -- present disposition and recommended disposal/reclamation.
 - d. Deficiencies in the current management of hazardous wastes and required projects, equipment, and training.
- D. Implementation of the Plan

The plan should be a well-reasoned document with specific recommendations. Means of implementing these recommendations will vary at different activities. Possible actions include:

- Activity instruction delineating hazardous waste responsibilities, such as collection, transfer, disposal, and overall program coordination.
- SOPA/TYCOM instructions providing ships with a central shore contact for technical assistance and disposal of hazardous wastes.
- Development of projects to correct deficiencies with storage, treatment, and disposal sites.
- Procurement of necessary equipment.
- Personnel training.

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SECTION IV

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN

A. Objectives

Another plan to be prepared from information compiled during the Hazardous Materials Management Survey is the Spill Prevention Control and Countermeasures (SPCC) Plan. The objective of the SPCC plan is to develop preventive systems to reduce the potential for hazardous materials spills. The plan will not address contingency planning.

The SPCC plan is an engineering document and, as such, must be approved by a professional engineer. The hazardous materials SPCC plan may be incorporated with the oil SPCC plan, if the activity so desires. The hazardous materials SPCC plan must be amended every time a facility change alters the nature of potential spills; i.e., the plan must be reviewed every time an NPDES permit is reissued or modified.

B. Applicable Survey Elements

The following results of the Hazardous Materials Management Survey will be used in the development of the hazardous materials SPCC plan:

- Identification of state/local hazardous materials regulations and applicable regulatory agencies.
- List of hazardous materials procured by the activity.
- Investigation of the activity's hazardous waste storage, treatment, and disposal sites to assess their environmental adequacy.
- Investigation of other areas with a potential for hazardous materials spills.

C. Contents of the Plan

Preparation of the hazardous materials SPCC plan is addressed in the proposed Federal regulation 40 CFR 151 (see section I D 2). This regulation will only apply to facilities subject to NPDES permitting requirements. However, it is anticipated that additional regulations will extend the SPCC requirement to all facilities subject to the authority of EPA; this means that all domestic Navy activities/complexes will be required to prepare hazardous materials SPCC plans.

The following description of the SPCC plan's contents has been drawn from 40 CFR 151. The purpose of the plan is to describe preventive systems to reduce the potential for hazardous materials spills. Particular emphasis should be placed on the 299 regulated substances (see Appendix B). The plan is an engineering document that will be written in a clear narrative form. Where maps, drawings, or plot plans are necessary to describe the prevention practices at the facility, they will be included in the plan. An activity that has experienced one or more discharges within 12 months prior to the effective date of 40 CFR 151 (again, this applies to NPDES-permitted facilities) must include a

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description of each incident, corrective action taken, and plans for preventing recurrence. The plan must consider the possibility of major failures/accidents. For each potential accident, the plan must include a prediction of the direction, rate of flow, and total quantity of hazardous materials that could be discharged. Close examination of waterfront operations is especially important.

The following preventive systems should be emphasized in the SPCC plan:

- Impervious secondary containment systems, including dikes, berms, retaining walls, impounding basins, diversion ponds, and retention ponds.
- Drainage control, including curbing, culverting, gutters, and sewers.
- Protection from the weather, including roofs and covers.

The SPCC plan should specifically address the following elements:

1. Liquid Storage Areas.

Tank or container materials must be compatible with the materials stored. Secondary containment, sufficient to contain the capacity of the largest single container or tank in the drainage system, must be provided. In addition, reasonable allowance for rainfall accumulation should be provided in designing secondary containment. The containment system must be impervious.

2. Raw Material Storage Areas (Other Than Liquid).

These sites must incorporate drainage or other control features if they are subject to runoff, leaching, or windblowing. The drainage control will direct the contaminated runoff or leachate to treatment systems or to other areas for disposal.

3. Plantsite Runoff.

Any other areas of the activity which could suffer a hazardous materials discharge due to runoff conditions must incorporate the necessary drainage control and ensure the proper treatment/disposal of the runoff. Waterfront locations are especially crucial.

4. Truck and Railcar Liquid Loading/Unloading Areas.

These areas must have sufficient secondary containment or treatment capacity to handle (1) the largest tank truck or railcar or (2) the largest compartment of a tank truck or railcar if the tanks are compartmented.

5. In-Plant Transfer, Process, and Materials Handling Areas.

Piping, processing equipment, and materials handling equipment must be designed so as to prevent discharges of hazardous substances. Materials used in piping and equipment must be compatible with the substances handled. Drainage control at these areas must be provided, as described previously. Additional protection such as covers or guards should be installed as appropriate.

6. Preventive Maintenance and Housekeeping.

The plan should provide for inspections to prevent equipment failures that could result in hazardous materials discharges. Inspections should include examinations for leaks, windblowing, corrosion, support or foundation failure, or other forms of deterioration or noncontainment. The plan will specify the appropriate inspection intervals based on design and operational experience. If a leak or some other condition is discovered, corrective action must be immediately taken.

7. Release of Rainwater from Dikes or Other Drainage Areas.

Only uncontaminated rainwater may be released from diked or other plant drainage areas, unless the released water is given approved treatment.

8. Facility Security.

Facilities must have the necessary security systems to prevent accidental or intentional entry, which could cause a discharge. The plan should address such security systems as fencing, lighting, vehicular traffic control, and securing of equipment and buildings.

9. Training.

Facility employees and contractor personnel using the facility must be trained in preventive measures at the facility. Employee training will be conducted at least once a year; the training will consist of (1) pollution control laws and regulations, (2) the SPCC plan, and (3) the particular features of the facility and its operations which are designed to prevent discharges. The SPCC plan should reference the Spill Contingency Plan for spill emergency procedures.

D. Implementation of the Plan.

Suggested actions to implement the SPCC plan include:

- Development of projects to install spill prevention systems.
- Procurement of necessary equipment.
- Training of personnel in spill prevention and emergency procedures.

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SECTION V

SPILL CONTINGENCY PLAN

A. Objectives

Even with a good SPCC plan and sound preventive engineering, hazardous materials spills will occasionally occur. The activity should have an operational Spill Contingency Plan for such emergencies, detailing specific procedures for response, containment, and cleanup. The Hazardous Materials Management Survey will provide the background information for developing this plan.

B. Applicable Survey Elements

The following results of the Hazardous Materials Management Survey will be used in the development of the Hazardous materials Spill Contingency Plan:

- Identification of state/local hazardous materials regulations and applicable regulatory agencies.
- List of hazardous materials procured by the activity.
- Investigation of areas with a potential for hazardous materials spills.
- Assessment of the activity's ability to respond to spill emergencies.
- Evaluation of expertise available at the activity for various aspects of hazardous materials management.
- Civilian alternatives available to the activity during hazardous materials spill emergencies.

C. Contents of the Plan

The hazardous materials Spill Contingency Plan will be an activity instruction detailing emergency response and reporting procedures. The instruction can be an addition to the existing oil spill contingency instruction, or it can stand on its own. The hazardous materials spill contingency instruction will be referenced by the SPCC plan for spill emergency procedures (as mandated by proposed regulation 40 CFR 151).

The spill contingency instruction should provide response information on hazardous materials which could be spilled. This information can be developed by determining which hazardous substances (with particular emphasis on the 299 regulated substances) have been ordered through the supply system and providing emergency guidance for each. The emergency response information may be extracted from the Oil and Hazardous Materials Technical Assistance Data System (OHMTADS), available through the EFD; this information also appears in various technical documents such as "Hazardous Materials-Emergency Action Guide", issued by the U.S. Department of Transportation. For each hazardous material, the following information should be provided in the instruction: product name, stock number, hazardous constituents, hazardous properties, synonyms, common uses, storage procedures, handling procedures, safety precautions, immediate action in case of spills, containment and control, and disposal procedures.

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The spill contingency instruction should also provide an emergency number in case of a spill. Generally, the activity's Fire Department will be assigned responsibility for hazardous materials spill response; this responsibility is a natural extension of the firefighter's current duties. Other organizations that could assume spill response duties include Explosive - Ordnance Disposal (EOD) forces and Disaster Preparedness units. Large spills may exceed the Navy's in-house resources, requiring the assistance of spill teams from EPA, the U.S. Coast Guard, or private firms.

In general, spill emergency operations will proceed in the following sequence:

1. Discovery, Identification, and Notification.

Discovery of a spill usually results from one or more of the following: (1) casual observation by personnel or the public, (2) result of investigation, or (3) report made by the spiller. Whatever the mode of discovery, all Navy spills (on land or water) should be immediately reported to the activity contact specified in the contingency instruction; the contact will, in turn, report the spill to the appropriate commands.

If one of the 299 regulated substances has been spilled in an amount exceeding the "reportable quantity" (see Appendix B), the contact will immediately report the spill to the National Response Center (24-hour, toll-free number (800) 424-8802). In accordance with OPNAVINST 6240.3E (chapter 7), this telephonic report must be followed up by a confirming message as soon as possible.

2. Immediate Action.

The activity contact or his representative (e.g., Fire Department) will arrive at the scene of the spill and, in the capacity as On-Scene Coordinator (OSC), immediately direct the following operations: (1) render first aid to injured personnel, (2) secure the spill area to unauthorized individuals, even to the extent of evacuation, if required, and (3) provide for the safety of the spill response crew through the use of protective clothing and equipment. The OSC will then determine: (1) the magnitude of the spill and the hazards involved, (2) the ability of local resources to handle the emergency, and (3) the speed required to prevent a major catastrophe.

Knowledge about the spilled material will be necessary for effective action. After identifying the material, either the spill contingency instruction or some other technical source should be consulted for specific response information. If no such sources are at hand, the following personnel/organizations should be contacted for technical assistance: (1) activity experts such as chemists or industrial hygienists, (2) the cognizant EFD, (3) the Navy Environmental Support Office (NESO), or (4) CHEMTREC (an emergency hazardous materials information service) at (800) 424-9300.

If the emergency is beyond local capabilities, the OSC should request the aid of the Navy On-Scene Coordinator (NOSC), specified by the Naval District. For major emergencies the NOSC may alert Federal Regional Response Teams (RRTs) and/or call in a private spill response team.

3. Containment and Control.

The exact nature of response actions will depend on the hazardous materials in question. Generally, containment and control will proceed in this manner: (1) stopping the source of the spill if spilling is in progress, (2) confining the spill and preventing its spread, particularly to waterways, and (3) taking actions required for the particular material.

4. Cleanup and Decontamination.

After effectively containing the spill and, thereby, ending the immediate threat posed by the material, cleanup actions should commence. The nature of the cleanup will depend on the substance. For example, sorbents may prove effective for cleaning up liquids or a solid substance might be swept up. Complete cleanup may require removal of contaminated soil such as PCB spills on the ground.

Decontamination procedures will be required after cleanup to eliminate all traces of the substance or, at least, reduce it to some acceptable level; for example, bleach will effectively decontaminate paved areas after spills of certain pesticides. Personnel decontamination is also important and should include showers and cleansing of clothing and equipment.

5. Disposal.

All contaminated materials, including sorbents, cloth, soil, wood, etc., that cannot be decontaminated, must be hauled to a hazardous waste disposal facility (incinerator, landfill, etc.). Approved disposal sites are described in the Navy's "Hazardous Waste Disposal Guide", NESO 20.2-011; every Navy activity should have access to a copy of this publication. It is cautioned that hazardous materials must be carefully packaged in leakproof containers in accordance with DOT regulations before being transported.

6. Documentation and Cost Recovery.

Economic impacts of a hazardous material spill and resultant cleanup operations can range from the direct cost of product loss, spill containment, cleanup, disposal, and restoration to indirect costs associated with the spill (e.g., personnel injury, loss of commercial fisheries, reduced values of affected real estate). These costs vary considerably. Cleanup costs, for example, may reflect the use of in-house firefighters, trained in hazardous materials spill response, along with protective gear and cleanup equipment. The alternative to in-house capability is dependence on RRTs or spill response contractors; costs of this alternative will vary with the level of service provided.

Documentation of costs is particularly important where reimbursement to or by the Navy is involved, or where funding and cleanup are the responsibilities of different Navy commands. Documentation of the facts surrounding a hazardous materials spill is essential in the event of a legal action arising from the spill.

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D. Implementation of the Plan

As previously noted, the Spill Contingency Plan will be an activity instruction detailing emergency response and reporting procedures. The instruction should be fully coordinated with the Naval District and subarea spill contingency plans and should reference these documents to establish a clear line of authority. Other implementing actions include:

- Personnel training in emergency procedures.
- Procurement of necessary equipment and protective gear.
- Coordination with appropriate Navy commands and Federal, state, and local agencies.

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APPENDIX A

HAZARDOUS MATERIALS MANAGEMENT SURVEY

CHECKLIST

Enclosure (1)

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HAZARDOUS MATERIALS MANAGEMENT SURVEY
CHECKLIST

- ___ Primary personnel/organizations involved in hazardous materials management at the activity. (HWM/SPCC/SC)
- ___ General activity information (e.g., mission, area, population, etc.). (HWM/SPCC/SC)
- ___ Federal/state/local hazardous materials regulations and regulatory contacts. (HWM/SPCC/SC)
- ___ List of hazardous materials. (SPCC/SC)
- ___ Hazardous waste inventory. (HWM)
- ___ Description of on-base hazardous waste facilities, including: (HWM/SPCC)
 - Storage sites
 - Treatment sites
 - Disposal sites
- ___ Identification of spill potential areas, including: (SPCC/SC)
 - Liquid storage areas
 - Raw material storage areas (other than liquids)
 - Plant site runoff areas
 - Truck and railcar liquid loading/unloading areas
 - In-plant transfer, process, and materials handling areas
- ___ Assessment of activity's hazardous waste management system. (HWM)
- ___ Assessment of activity's current ability to respond to spill emergencies: (SC)
 - Activity instructions
 - Assigned responsibilities
 - Personnel training
 - Protective equipment
 - Cleanup equipment
- ___ Identification of in-house hazardous materials expertise. (HWM/SC)
- ___ Identification of civilian alternatives, including: (HWM/SC)
 - Private haulers
 - Hazardous waste disposal sites
 - Spill response teams

NOTE: The plans which relate to each survey item are listed in parentheses on the right:

HWM - Hazardous Waste Management Plan
 SPCC - Spill Prevention Control and Countermeasures Plan
 SC - Spill Contingency Plan

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APPENDIX B
HAZARDOUS MATERIALS INFORMATION

Enclosure (1)

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299 HAZARDOUS MATERIALS REGULATED
BY THE CLEAN WATER ACT

<u>Material</u>	<u>Reportable Quantity (lbs/kgs)</u>	<u>Material</u>	<u>Reportable Quantity (lbs/kgs)</u>
Acetaldehyde	1,000/454	Ammonium sulfamate	5,000/2,270
Acetic Acid	1,000/454	Ammonium sulfide	5,000/2,270
Acetic anhydride	1,000/454	Ammonium sulfite	5,000/2,270
Acetone cyanohydrin	10/4.54	Ammonium tartrate	5,000/2,270
Acetyl bromide	5,000/2,270	Ammonium thiocyanate	5,000/2,270
Acetyl chloride	5,000/2,270	Ammonium thiosulfate	5,000/2,270
Acrolein	1/0.454	Amyl acetate	1,000/454
Acrylonitrile	100/45.4	Aniline	1,000/454
Adipic acid	5,000/2,270	Antimony pentachloride	1,000/454
Aldrin	1/0.454	Antimony potassium tartrate	1,000/454
Allyl alcohol	100/45.4	Antimony tribromide	1,000/454
Allyl chloride	1,000/454	Antimony trichloride	1,000/454
Aluminum sulfate	5,000/2,270	Antimony trifluoride	1,000/454
Ammonia	100/45.4	Antimony trioxide	5,000/2,270
Ammonium acetate	5,000/2,270	Arsenic disulfide	5,000/2,270
Ammonium benzoate	5,000/2,270	Arsenic pentoxide	5,000/2,270
Ammonium bicarbonate	5,000/2,270	Arsenic trichloride	5,000/2,270
Ammonium bichromate	1,000/454	Arsenic trioxide	5,000/2,270
Ammonium bifluoride	5,000/2,270	Barium cyanide	10/4.54
Ammonium bisulfite	5,000/2,270	Benzene	1,000/454
Ammonium carbonate	5,000/2,270	Benzoic acid	5,000/2,270
Ammonium carbonate	5,000/2,270	Benzonitrile	1,000/454
Ammonium chloride	1,000/454	Benzoyl chloride	1,000/454
Ammonium chromate	5,000/2,270	Benzyl chloride	100/45.4
Ammonium citrate	5,000/2,270	Beryllium chloride	5,000/2,270
Ammonium fluoride	5,000/2,270	Beryllium fluoride	5,000/2,270
Ammonium fluoride	5,000/2,270	Beryllium nitrate	5,000/2,270
Ammonium hydroxide	1,000/454	Butyl acetate	5,000/2,270
Ammonium oxalate	5,000/2,270	n-Butyl phthalate	100/45.4
Ammonium silicofluoride	1,000/454		

Enclosure (1)

Reportable Quantity
(lbs/kgs)

Material

Butylamine	1,000/454
Butyric acid	5,000/2,270
Cadmium acetate	100/45.4
Cadmium bromide	100/45.4
Cadmium chloride	100/45.4
Calcium arsenate	1,000/454
Calcium arsenite	1,000/454
Calcium carbide	5,000/2,270
Calcium chromate	1,000/454
Calcium cyanide	10/4.54
Calcium dodecylbenzenesulfonate	1,000/454
Calcium hydroxide	5,000/2,270
Calcium hypochlorite	100/45.4
Calcium oxide	5,000/2,270
Captan	10/4.54
Carbaryl	100/45.4
Carbofuran	10/4.54
Carbon disulfide	5,000/2,270
Carbon tetrachloride	5,000/2,270
Chlordane	1/0.454
Chlorine	10/4.54
Chlorobenzene	100/45.4
Chloroform	5,000/2,270
Chlorpyrifos	1/0.454
Chlorosulfonic acid	1,000/454
Chromic acetate	1,000/454
Chromic acid	1,000/454
Chromic sulfate	1,000/454
Chronicus chloride	1,000/454
Cobaltous bromide	1,000/454
Cobaltous formate	1,000/454
Cobaltous sulfamate	1,000/454
Coumaphos	10/4.54
Cresol	1,000/454
Crotonaldehyde	100/45.4

Reportable Quantity
(lbs/kgs)

Material

Cupric acetate	100/45.4
Cupric acetoarsenite	100/45.4
Cupric chloride	10/4.54
Cupric nitrate	100/45.4
Cupric oxalate	100/45.4
Cupric sulfate	10/4.54
Cupric sulfate ammoniated	100/45.4
Cupric tartrate	100/45.4
Cyanogen chloride	10/4.54
Cyclohexane	1,000/454
2,4-D Acid	100/45.4
2,4-D Esters	100/45.4
DDT	1/0.454
Diazinon	1/0.454
Dicamba	1,000/454
Dichlobenil	1,000/454
Dichlorone	1/0.454
Dichlorobenzene	100/45.4
Dichloropropene	5,000/2,270
Dichloropropene	5,000/2,270
Dichloropropene-	5,000/2,270
Dichloropropene Mixture	5,000/2,270
2,2-Dichloropropionic acid	10/4.54
Dichlorvos	1/0.454
Dieldrin	1/0.454
Diethylamine	1,000/454
Dimethylamine	1,000/454
Dinitrobenzene	1,000/454
Dinitrophenol	1,000/454
Dinitrotoluene	1,000/454
Diquat	1,000/454
Disulfoton	1/0.454
Diuron	100/45.4
Dodecylbenzenesulfonic acid	1,000/454
Endosulfan	1/0.454

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Reportable Quantity (lbs/kgs)		Reportable Quantity (lbs/kgs)	
Material		Material	
Enclosure (1)	Endrin	10/4.54	5,000/2,270
	Epichlorohydrin	1,000/454	1,000/454
	Ethion	10/4.54	5,000/2,270
	Ethylbenzene	1,000/454	5,000/2,270
	Ethylenediamine	1,000/454	5,000/2,270
	Ethylene dibromide	1,000/454	5,000/2,270
	Ethylene dichloride	5,000/2,270	5,000/2,270
	EDTA	1,000/454	1/0.454
	Ferric ammonium citrate	1,000/454	
	Ferric ammonium oxalate	1,000/454	
B-4	Ferric chloride	1,000/454	10/4.54
	Ferric fluoride	100/45.4	5,000/2,270
	Ferric nitrate	1,000/454	5,000/2,270
	Ferric sulfate	1,000/454	100/45.4
	Ferrous ammonium sulfate	1,000/454	
	Ferrous chloride	100/45.4	10/4.54
	Ferrous sulfate	1,000/454	10/4.54
	Formaldehyde	1,000/454	10/4.54
	Formic acid	5,000/2,270	10/4.54
	Fumaric acid	5,000/2,270	1/0.454
	Furfural	1,000/454	100/45.4
	Guthion	1/0.454	
	Heptachlor	1/0.454	
	Hexachlorocyclopentadiene	1/0.454	
	Hydrochloric acid	5,000/2,270	
	Hydrofluoric acid	5,000/2,270	
	Hydrogen cyanide	10/4.54	
	Hydrogen sulfide	100/45.4	
	Isoprene	1,000/454	
	Isopropylamine	1,000/454	
	dodecylbenzenesulfonate		
	Kelthane	5,000/2,270	
	Kepone	1,000/454	
	Lead acetate	5,000/2,270	
	Lead arsenate	5,000/2,270	
	Lead chloride	5,000/2,270	
	Lead fluoride		
	Lead iodide		
	Lead nitrate		
	Lead stearate		
	Lead sulfate		
	Lead sulfide		
	Lead thiocyanate		
	Lindane		
	Lithium chromate		
	Malathion		
	Maleic acid		
	Maleic anhydride		
	Mercaptodimethur		
	Mercuric cyanide		
	Mercuric nitrate		
	Mercuric sulfate		
	Mercurothiocyanate		
	Mercurous nitrate		
	Methoxychlor		
	Methyl mercaptan		
	Methyl methacrylate		
	Methyl parathion		
	Mevinphos		
	Mexacarbate		
	Monoethylamine		
	Monoethylamine		
	Naled		
	Naphthalene		
	Naphthenic acid		
	Nickel ammonium sulfate		
	Nickel chloride		
	Nickel hydroxide		
	Nickel nitrate		
	Nickel sulfate		

Reportable Quantity
(lbs/kgs)

Material

Sodium bichromate 1,000/454
Sodium bichloride 5,000/2,270
Sodium bisulfite 5,000/2,270
Sodium chromate 1,000/454
Sodium cyanide 10/4.54

Sodium dodecylbenzenesulfonate 1,000/454
Sodium fluoride 5,000/2,270
Sodium hydrosulfide 5,000/2,270
Sodium hydroxide 1,000/454
Sodium hypochlorite 100/45.4

Sodium methyate 1,000/454
Sodium nitrite 100/45.4
Sodium phosphate, dibasic 5,000/2,270
Sodium phosphate, tribasic 5,000/2,270
Sodium selenite 1,000/454

Strontium chromate 1,000/454
Strychnine 10/4.54
Styrene 1,000/454
Sulfuric acid 1,000/454
Sulfur monochloride 1,000/454

2,4,5-T acid 100/45.4
2,4,5-T amines 100/45.4
2,4,5-T esters 100/45.4
2,4,5-T salts 100/45.4
2,4,5-TP acid 100/45.4

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2,4,5-TP acid esters 100/45.4
TDE 1/0.454
Tetraethyl lead 100/45.4
Tetraethyl pyrophosphate 100/45.4
Thallium sulfate 1,000/454

Toluene 1,000/454
Toxaphene 1/0.454
Trichlorfon 1,000/454
Trichloroethylene 1,000/454
Trichlorophenol 10/4.54

Reportable Quantity
(lbs/kgs)

Material

Nitric acid 1,000/454
Nitrobenzene 1,000/454
Nitrogen dioxide 1,000/454
Nitrophenol 1,000/454
Nitrotoluene 1,000/454

Paraformaldehyde 1,000/454
Parathion 1/0.454
Pentachlorophenol 10/4.54
Phenol 1,000/454
Phosgene 5,000/2,270

Phosphoric acid 5,000/2,270
Phosphorus 1/0.454
Phosphorus oxychloride 5,000/2,270
Phosphorus pentasulfide 100/45.4
Phosphorus trichloride 5,000/2,270

Polychlorinated biphenyls 10/4.54
Potassium arsenate 1,000/454
Potassium arsenite 1,000/454
Potassium bichromate 1,000/454
Potassium chromate 1,000/454

Potassium cyanide 10/4.54
Potassium hydroxide 1,000/454
Potassium permanganate 100/45.4
Propargite 10/4.54
Propionic acid 5,000/2,270

Propionic anhydride 5,000/2,270
Propylene oxide 5,000/2,270
Pyrethrins 1,000/454
Quinoline 1,000/454
Resorcinol 1,000/454

Selenium oxide 1,000/454
Silver nitrate 1/0.454
Sodium 1,000/454
Sodium arsenate 1,000/454
Sodium arsenite 1,000/454

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Reportable Quantity
(lbs/kgs)

Triethanolamine	1,000/454
dodecylbenzenesulfonate	
Triethylamine	5,000/2,270
Trimethylamine	1,000/454
Uranyl acetate	5,000/2,270
Uranium nitrate	5,000/2,270
Vanadium pentoxide	1,000/454
Vanadyl sulfate	1,000/454
Vinyl acetate	1,000/454
Vinylidene chloride	5,000/2,270
Xylene	1,000/454
Xylenol	1,000/454
Zinc acetate	1,000/454
Zinc ammonium chloride	5,000/2,270
Zinc borate	1,000/454
Zinc bromide	5,000/2,270
Zinc carbonate	1,000/454
Zinc chloride	5,000/2,270
Zinc cyanide	10/4.54
Zinc fluoride	1,000/454
Zinc formate	1,000/454
Zinc hydrosulfite	1,000/454
Zinc nitrate	5,000/2,270
Zinc phenosulfonate	5,000/2,270
Zinc phosphide	1,000/454
Zinc silicofluoride	5,000/2,270
Zinc sulfate	1,000/454
Zirconium nitrate	5,000/2,270
Zirconium potassium fluoride	5,000/2,270
Zirconium sulfate	5,000/2,270
Zirconium tetrachloride	5,000/2,270

Enclosure (1)

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FEDERAL SUPPLY CLASSES WITH HAZARDOUS ITEMS*

Federal Supply Classes with predominantly hazardous items:

<u>FSC</u>	<u>Class Description</u>
6810	Chemicals
6820	Dyes
6830	Gases; Compressed and Liquified
6840	Pest Control Agents and Disinfectants
6850	Miscellaneous Chemical Specialties
7930	Cleaning and Polishing Compounds and Preparations
8010	Paints, Dopes, Varnishes, and Related Products
8030	Preservative and Sealing Compounds
8040	Adhesives
9110	Fuels, Solid
9130	Liquid Propellants and Fuels, Petroleum Base
9135	Liquid Propellant Fuels and Oxidizers, Chemical Base
9140	Fuel Oils
9150	Oils and Greases: Cutting, Lubricating and Hydraulic
9160	Miscellaneous Waxes, Oils and Fats

Federal Supply Classes with some hazardous items:

<u>FSC</u>	<u>Class Description</u>	<u>Hazardous Items</u>
1370	Pyrotechnics	Warning fuse, fire starter
1375	Demolition Materials	Explosive device
2640	Tire Rebuilding and tire and tube repair materials	Some items containing flammable or toxic compounds
3439	Welding and Brazing supplies	Some items such as cleaners, acids, flux and supplies that contain or produce hazardous fumes
3610	Printing, duplicating, and bookbinding equipment	Flammable or toxic lithographic solutions
5610	Mineral Construction materials, bulk	Some items such as cutback asphalt, deck and floor covering, deck and surface underlay compound, sealing compound, flight deck compounds

*Extracted from Fed. Std. No. 313A, which governs the preparation of Material Safety Data Sheets.

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<u>FSC</u>	<u>Class Description</u>	<u>Hazardous Items</u>
5640	Wallboard, building paper, and thermal insulation materials	Asbestos cloth which has loose fibers or flyings that may become airborne
6135	Batteries, Primary	Lead-acid, and mercury batteries and alkaline (with electrolyte)
6505	Drugs, Biologicals	
6750	Photographic Supplies	Some items containing hazardous chemicals, solvents, thinners, and cements
6780	Photographic sets, kits, and outfits	(See FSC 6750)
7510	Office Supplies	Some hazardous items, such as solvents, thinners, cleaning fluids, flammable inks and varnishes
8510	Perfumes, Toilet preparations, and powders	Shipping containers and pressurized containers with flammable propellants
8520	Toilet Soap, Shaving Preparations, and Dentifrices	(See FSC 8510)
8720	Fertilizers	Some items containing weed and pest control or other harmful ingredients, or because of their composition, are hazardous
9920	Smoker's Articles and matches	Lighter Fuel and matches only

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Appendix C

Hazardous Wastes Listings

Enclosure (1)

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COMMON HAZARDOUS WASTES AT NAVY ACTIVITIES

Naval Shipyards*

Acids
Asbestos
Caustics
Mercury wastes

Metal wastes
Paint wastes
Plating wastes
Sandblasting wastes
(Organotin)

Ship wastes
Solvents (e.g., de-
greasers)
Strippers

Naval Air Rework Facilities**

Acids
Beryllium wastes
Caustics

Metal wastes
Paint wastes
Plating wastes

Solvents (e.g., de-
greasers)
Strippers

Fuel Depots

Oily wastes

Tank bottoms

Waste fuels

Naval Weapons Stations

Ordnance wastes

All Activities

Battery acids
Boiler blowdown wastes
Chemical cleaners
Cooling tower bleedoff
Corrosion inhibitors

Disaster preparedness
wastes (i.e., DS-2,
DANC, STB, Ethylene
Oxide)
Firefighting agents
Hydraulic fluids

Paint wastes
PCBs
Pesticide wastes
Photographic lab wastes
Oily wastes
Miscellaneous chemicals
(e.g., laboratory
wastes)

*These wastes may also be found at some Naval Stations.

**These wastes may also be found at some Naval Air Stations.

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OPERATIONS/PROCESSES AND RELATED HAZARDOUS WASTES

<u>OPERATION/PROCESS</u>	<u>HAZARDOUS WASTES</u>
Metal plating	Acids Pickling liquor Caustics Spent cyanide solutions Chromium wastes Other metal wastes
Degreasing	Solvents (e.g., trichloroethylene, trichloroethane)
Painting	Paint strippers Paint thinners Paint wastes (slops) Waste epoxy (resin)
Machine shops	Cutting oils Toxic metals
Miscellaneous ship repair wastes	Ripout wastes (asbestos) Sandblasting wastes (organotin) Welding wastes (acetylene sludge)
Miscellaneous aircraft repair wastes	Brake relining wastes (beryllium wastes) Metal stress and defect analysis wastes (fluorescent dye) Welding wastes (acetylene sludge)
Fuel storage and supply	Waste (or slop) oil Bunker oil Fuel waste Tank bottom sediment Tank cleaning sludges
Transportation	Waste oils Hydraulic fluids Battery acids Asbestos (brake linings) Ethylene glycol (coolants) Paint wastes Solvents
Pest control shop	Unrinsed pesticide containers Waste pesticides
Boilers	Blowdown wastes (e.g., hydrazine, morphaline) Feedwater chemicals Feedwater testing wastes (e.g., mercuric nitrate in submarines)

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OPERATIONS/PROCESSES AND RELATED HAZARDOUS WASTES
(CONTINUED)

<u>OPERATION/PROCESS (CONT.)</u>	<u>HAZARDOUS WASTES (CONT.)</u>
Cooling towers	Bleedoff wastes Feedwater chemicals
Battery shop	Battery acids Alkaline battery fluid Heavy metals
Disaster preparedness	Bleach (STB) Decontaminating gases (ethylene oxide) Decontaminating liquids (DS-2, DANC)
Print shop, ADP center	Printing ink Data processing fluid
Other operations/processes	Ordnance wastes (e.g., TNT, RDX, picric acid, otto fuel) Photographic wastes Transformer fluids (PCBs) Industrial Waste Treatment Plant (IWTP) sludge Laboratory wastes Firefighting agents (e.g., AFFF) Chemical toilet waste Chemical cleaners

Enclosure (1)

C-4



DEPARTMENT OF THE NAVY
NAVAL SUPPLY SYSTEMS COMMAND
WASHINGTON, D. C. 20376

Canc: May 82
NAVSUPNOTE 5100
SUP 0321

12 JUN 1981

NAVSUP NOTICE 5100

Subj: Identification of Potential Hazards in Storage and Handling and
Emergency Response to Incidents Involving Hazardous Materials

- Ref: (a) Federal Standard 313, Symbols for Packages and Containers
for Hazardous Industrial Chemicals and Materials
(b) Consolidated Hazardous Item List (CHIL), NAVSUP PUB 4500
(c) NAVMAT P-5100, Safety Precautions for Shore Activities
(d) OPNAVINST 5100.19, Navy Safety Precautions for Forces Afloat
(e) MIL-STD-129, Marking for Shipment and Storage
(f) DODINST 6050.5, Hazardous Material Information System
(g) DOD 4145.19-R-1, Storage and Materials Handling
(h) DOT P 5800.2, Hazardous Materials, 1980 Emergency Response
Guidebook

1. Purpose. To set forth guidance for the identification of potential hazards in storage and handling and to provide guidance for effective response to emergencies involving hazardous materials arising from accident, fire, spill or leak.

2. Background. Reference (a) cited requirements that National Fire Protection Association (NFPA) symbols be affixed to unit, intermediate and shipping containers of hazardous industrial chemicals and materials. The symbols were designed to alert personnel of hazards relating to fire prevention, exposure and control, and for planning for effective fire fighting operations. When reference (a) was revised, the requirement for applying the symbols to hazardous material on procurement contracts was deleted. Reasons for the deletion are numerous but include the following: There is no statutory requirement for NFPA labels; there are no precise definitions for the degree of hazard for health and reactivity categories; contractors objected to separate labeling requirements for Navy procurements and refused to comply; the labels require interpretation by the user who does not always understand the numerical rating system; and the Department of Transportation (DOT) objected to the use of NFPA labels on shipping containers as being confusing with required DOT labels and possibly in conflict with DOT regulations. Reference (b) was revised to delete the mandatory requirement for NFPA labels and to replace with an optional requirement. Similar changes are being recommended for references (c) and (d). Accordingly, the health, fire, reactivity and specific hazard data contained in the Consolidated Hazardous Item List (CHIL) will no longer be supported via procurement. Effort is being made by the Occupational Safety and Health Administration (OSHA) to develop a hazards identification standard applicable to all hazardous materials at the manufacturing level. It is anticipated that the OSHA standard, when

Jun 30
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1891

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finalized, will provide a satisfactory system for the identification and labeling of hazardous materials. Precautionary markings required by reference (e) remain in effect and are considered sufficient for alerting personnel of hazards present. References (f) and (g) provide additional guidance on the storage and handling of hazardous materials.

3. Discussion. Reference (h) was prepared for DOT as a guide for immediate response to emergencies involving hazardous materials arising from accident, fire, spill or leak. The guide cites potential hazards and emergency response action for a large number of hazardous materials (approximately 2,200) by quick reference to Identification (ID) number, shipping name or placard found on the shipping papers, shipping container or carrier's vehicle. Guidance is also included for material which cannot be identified by number, name or placard. The guide further includes protective measures for personnel responding to the emergency, isolation and evacuation distances for selected materials, emergency telephone assistance and first aid procedures. While the guidebook was designed primarily for use at incidents occurring on the highway or railroad, it will also serve as a guide in handling incidents in other modes of transportation and at facilities such as terminals and warehouses. Information provided by the guidebook will replace data previously furnished by the NFPA labels, supplement any forthcoming labeling system and provide a basis for responding to emergencies. Copies of reference (h) are being forwarded to all addressees under separate cover. Future revisions will be distributed when available.

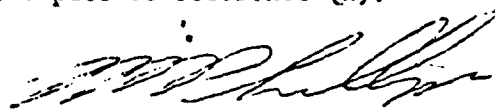
4. Action. All activities and ships engaged in the storage, handling, packaging, shipping or transportation of hazardous materials will:

- a. Retain reference (h) and maintain as required.
- b. Utilize reference (h) as a source of guidance in the storage and handling of hazardous materials.
- c. Assure that all hazardous materials can be readily identified by ID number, shipping name, hazard label or placard symbol. Identification should be maintained with the item or groups of items in the storage, handling, and shipping areas as practicable.
- d. Utilize reference (h) as a prime source of guidance in emergencies involving hazardous materials.
- e. Utilize references (b), (e), (f) and (g) to supplement the above guidance.

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f. Advise the Naval Supply Systems Command (SUP 0321) within 60 days of requirements for additional copies of reference (h).



R. A. PHILLIPS

Deputy Commander,
Fleet Support & Supply Operations

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THE NATIONAL ENVIRONMENTAL POLICY ACT

(42 U.S.C. 4341; Amended by PL 94-52, July 3, 1975)

PURPOSE

Sec. 2. The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

TITLE I

DECLARATION OF NATIONAL ENVIRONMENTAL POLICY

Sec. 101. (a) The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

(b) In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may—

(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(c) The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

Sec. 102. The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall—

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—

(i) the environmental impact of the proposed action,

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) alternatives to the proposed action,

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;

(D) study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(E) recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(F) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(G) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(H) assist the Council on Environmental Quality established by title II of this Act.

Sec. 103. All agencies of the Federal Government shall review their present statutory authority, administrative regulations, and current policies and procedures for the purpose of determining whether there are any deficiencies or inconsistencies therein which prohibit full compliance with the purposes and provisions of this Act and shall propose to the President not later than July 1, 1971, such measures as may be necessary to bring their authority and policies into conformity with the intent, purposes, and procedures set forth in this Act.

Sec. 104. Nothing in Section 102 or 103 shall in any way affect the specific statutory obligations of any Federal agency (1) to comply with criteria or standards of environmental quality, (2) to coordinate or consult with any other Federal or State agency, or (3) to act, or refrain from acting contingent upon the recommendations or certification of any other Federal or State agency.

Sec. 105. The policies and goals set forth in this Act are supplementary to those set forth in existing authorizations of Federal agencies.

TITLE II

COUNCIL ON ENVIRONMENTAL QUALITY

Sec. 201. The President shall transmit to the Congress annually beginning July 1, 1970, an Environmental Quality Report (hereinafter referred to as the "report") which shall set forth (1) the status and condition of the major natural, manmade, or altered environmental classes of the Nation, including, but not limited to, the air, the aquatic, including marine, estuarine, and fresh water, and the terrestrial environment, including, but not limited to, the forest land, wetland, range, urban, suburban, and rural environment; (2) current and foreseeable trends in the quality, management and utilization of such environments and the effects of those trends on the social, economic, and other requirements of the Nation; (3) the adequacy of available natural resources for fulfilling human and economic requirements of the Nation in the light of expected population pressures; (4) a review of the programs and activities (including regulatory activities) of the Federal Government, the State and local governments, and nongovernmental entities or individuals, with particular reference to their effect on the environment and on the conservation, development and utilization of natural resources; and (5) a program for remedying the deficiencies of existing programs and activities, together with recommendations for legislation.

Sec. 202. There is created in the Executive Office of the President a Council on Environmental Quality (hereinafter

referred to as the "Council"). The Council shall be composed of three members who shall be appointed by the President to serve at his pleasure, by and with the advice and consent of the Senate. The President shall designate one of the members of the Council to serve as Chairman. Each member shall be a person who, as a result of his training, experience, and attainments, is exceptionally well qualified to analyze and interpret environmental trends and information of all kinds; to appraise programs and activities of the Federal Government in the light of the policy set forth in title I of this Act; to be conscious of and responsive to the scientific, economic, social, esthetic, and cultural needs and interests of the Nation; and to formulate and recommend national policies to promote the improvement of the quality of the environment.

Sec. 203. (a) The Council may employ such officers and employees as may be necessary to carry out its functions under this Act. In addition, the Council may employ and fix the compensation of such experts and consultants as may be necessary for the carrying out of its functions under this Act, in accordance with section 3109 of title 5, United States Code (but without regard to the last sentence thereof).

(b) Notwithstanding section 3679(b) of the Revised Statutes (31 U.S.C. 665(b)), the Council may accept and employ voluntary and uncompensated services in furtherance of the purposes of the Council.

Sec. 204. It shall be the duty and function of the Council—

(1) to assist and advise the President in the preparation of the Environmental Quality Report required by section 201;

(2) to gather timely and authoritative information concerning the conditions and trends in the quality of the environment both current and prospective, to analyze and interpret such information for the purpose of determining whether such conditions and trends are interfering, or are likely to interfere, with the achievement of the policy set forth in title I of this Act, and to compile and submit to the President studies relating to such conditions and trends;

(3) to review and appraise the various programs and activities of the Federal Government in the light of the policy set forth in title I of this Act for the purpose of determining the extent to which such programs and activities are contributing to the achievement of such policy, and to make recommendations to the President with respect thereto;

(4) to develop and recommend to the President national policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the Nation;

(5) to conduct investigations, studies, surveys, research, and analyses relating to ecological systems and environmental quality;

(6) to document and define changes in the natural environment, including the plant and animal systems, and to accumulate necessary data and other information for a continuing analysis of these changes or trends and an interpretation of their underlying causes;

(7) to report at least once each year to the President on the state and condition of the environment; and

(8) to make and furnish such studies, reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

Sec. 205. In exercising its powers, functions, and duties under this Act, the Council shall—

(1) consult with the Citizens' Advisory Committee on Environmental Quality established by Executive Order numbered 11472, dated May 29, 1969, and with such representatives of science, industry, agriculture, labor, conservation organizations, State and local governments, and other groups, as it deems advisable; and

(2) utilize, to the fullest extent possible, the services, facilities, and information (including statistical information) of public and private agencies and organizations, and individuals, in order that duplication of effort and expense may be avoided, thus assuring that the Council's activities will not unnecessarily overlap or conflict with similar activities authorized by law and performed by established agencies.

Sec. 206. Members of the Council shall serve full time and the Chairman of the Council shall be compensated at the rate provided for Level II of the Executive Schedule Pay Rates (5 U.S.C. 5313). The other members of the Council shall be compensated at the rate provided for Level IV of the Executive Schedule Pay Rates (5 U.S.C. 5315).

Acceptance of Travel Reimbursement

Sec. 207. The Council may accept reimbursements from any private nonprofit organization or from any department, agency, or instrumentality of the Federal Government, any State, or local government, for the reasonable travel expenses incurred by an officer or employee of the Council in connection with his attendance at any conference, seminar, or similar meeting conducted for the benefit of the Council.

Expenditures for International Travel

Sec. 208. The Council may make expenditures in support of its international activities, including expenditures for: (1) international travel; (2) activities in implementation of international agreements; and (3) the support of international exchange programs in the United States and in foreign countries.

Sec. 209. There are authorized to be appropriated to carry out the provisions of this Act not to exceed \$300,000 for fiscal year 1970, \$700,000 for fiscal year 1971, and \$1,000,000 for each fiscal year thereafter.



Public Law 93-633
93rd Congress, H. R. 15223
January 3, 1975

An Act

To regulate commerce by improving the protections afforded the public against risks connected with the transportation of hazardous materials, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Transportation Safety Act of 1974".

TITLE I—HAZARDOUS MATERIALS

SHORT TITLE

SEC. 101. This title may be cited as the "Hazardous Materials Transportation Act".

DECLARATION OF POLICY

SEC. 102. It is declared to be the policy of Congress in this title to improve the regulatory and enforcement authority of the Secretary of Transportation to protect the Nation adequately against the risks to life and property which are inherent in the transportation of hazardous materials in commerce.

DEFINITIONS

SEC. 103. As used in this title, the term—

- (1) "commerce" means trade, traffic, commerce, or transportation, within the jurisdiction of the United States, (A) between a place in a State and any place outside of such State, or (B) which affects trade, traffic, commerce, or transportation described in clause (A);
- (2) "hazardous material" means a substance or material in a quantity and form which may pose an unreasonable risk to health and safety or property when transported in commerce;
- (3) "Secretary" means the Secretary of Transportation, or his delegate;
- (4) "serious harm" means death, serious illness, or severe personal injury;
- (5) "State" means a State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, or Guam;
- (6) "transports" or "transportation" means any movement of property by any mode, and any loading, unloading, or storage incidental thereto; and
- (7) "United States" means all of the States.

DESIGNATION OF HAZARDOUS MATERIALS

SEC. 104. Upon a finding by the Secretary, in his discretion, that the transportation of a particular quantity and form of material in commerce may pose an unreasonable risk to health and safety or property, he shall designate such quantity and form of material or group or class of such materials as a hazardous material. The materials so designated may include, but are not limited to, explosives, radioactive materials, etiologic agents, flammable liquids or solids, combustible liquids or solids, poisons, oxidizing or corrosive materials, and compressed gases.

REGULATIONS GOVERNING TRANSPORTATION OF HAZARDOUS MATERIALS

SEC. 105. (a) GENERAL. The Secretary may issue, in accordance with the provisions of section 552 of title 5, United States Code, after providing an opportunity for informal oral presentation, regulations for the safe transportation in commerce of hazardous materials. Such

regulations shall be applicable to any person who transports, or causes to be transported or shipped, a hazardous material, or who manufactures, fabricates, marks, maintains, reconditions, repairs, or tests a package or container which is represented, marked, certified, or sold by such person for use in the transportation in commerce of certain hazardous materials. Such regulations may govern any safety aspect of the transportation of hazardous materials which the Secretary deems necessary or appropriate, including, but not limited to, the packing, repacking, handling, labeling, marking, placarding, and routing (other than with respect to pipelines) of hazardous materials, and the manufacture, fabrication, marking, maintenance, reconditioning, repairing, or testing of a package or container which is represented, marked, certified, or sold by such person for use in the transportation of certain hazardous materials.

(b) COOPERATION.—In addition to other applicable requirements, the Secretary shall consult and cooperate with representatives of the Interstate Commerce Commission and shall consider any relevant suggestions made by such Commission, before issuing any regulation with respect to the routing of hazardous materials. Such Commission shall, to the extent of its lawful authority, take such action as is necessary or appropriate to implement any such regulation.

(c) REPRESENTATION.—No person shall, by marking or otherwise, represent that a container or package for the transportation of hazardous materials is safe, certified, or in compliance with the requirements of this Act, unless it meets the requirements of all applicable regulations issued under this Act.

HANDLING OF HAZARDOUS MATERIALS

SEC. 106. (a) CRITERIA.—The Secretary is authorized to establish criteria for handling hazardous materials. Such criteria may include, but need not be limited to, a minimum number of personnel; a minimum level of training and qualification for such personnel; type and frequency of inspection; equipment to be used for detection, warning, and control of risks posed by such materials; specifications regarding the use of equipment and facilities used in the handling and transportation of such materials; and a system of monitoring safety assurance procedures for the transportation of such materials. The Secretary may revise such criteria as required.

(b) REGISTRATION.—Each person who transports or causes to be transported or shipped in commerce hazardous materials or who manufactures, fabricates, marks, maintains, reconditions, repairs, or tests packages or containers which are represented, marked, certified, or sold by such person for use in the transportation in commerce of certain hazardous materials (designated by the Secretary) may be required by the Secretary to prepare and submit to the Secretary a registration statement not more often than once every 2 years. Such a registration statement shall include, but need not be limited to, such person's name; principal place of business; the location of each activity handling such hazardous materials; a complete list of all such hazardous materials handled; and an agreement that such person is in compliance with all applicable criteria established under subsection (a) of this section.

Secretary shall by regulation prescribe the form of any such report and the information required to be included. The Secretary shall make any registration statement filed pursuant to this subsection available for inspection by any person, without charge, except that nothing in this sentence shall be deemed to require the release of any information described by subsection (b) of section 552 of title 5, United States Code, or which is otherwise protected by law from disclosure to the public.

(c) **REQUIREMENT.**—No person required to file a registration statement under subsection (b) of this section may transport or cause to be transported or shipped extremely hazardous materials, or manufacture, fabricate, mark, maintain, recondition, repair, or test packages or containers for use in the transportation of extremely hazardous materials, unless he has on file a registration statement.

EXEMPTIONS

SEC. 107. (a) GENERAL.—The Secretary, in accordance with procedures prescribed by regulation, is authorized to issue or renew, to any person subject to the requirements of this title, an exemption from the provisions of this title, and from regulations issued under section 105 of this title, if such person transports or causes to be transported or shipped hazardous materials in a manner so as to achieve a level of safety (1) which is equal to or exceeds that level of safety which would be required in the absence of such exemption, or (2) which would be consistent with the public interest and the policy of this title in the event there is no existing level of safety established. The maximum period of an exemption issued or renewed under this section shall not exceed 2 years, but any such exemption may be renewed upon application to the Secretary. Each person applying for such an exemption or renewal shall, upon application, provide a safety analysis as prescribed by the Secretary to justify the grant of such exemption. A notice of an application for issuance or renewal of such exemption shall be published in the Federal Register. The Secretary shall afford access to any such safety analysis and an opportunity for public comment on any such application, except that nothing in this sentence shall be deemed to require the release of any information described by subsection (b) of section 552 of title 5, United States Code, or which is otherwise protected by law from disclosure to the public.

VESSELS.—The Secretary shall exclude, in whole or in part, any applicable provisions and regulations under this title, any vessel which is excepted from the application of section 201 of the Ports and Waterways Safety Act of 1972 by paragraph (2) of such section (46 U.S.C. 391a(2)), or any other vessel regulated under such Act, to the extent of such regulation.

(c) **FIREARMS AND AMMUNITION.**—Nothing in this title, or in any regulation issued under this title, shall be construed to prohibit or regulate the transportation by any individual, for personal use, of any firearm (as defined in paragraph (4) of section 232 of title 18, United States Code) or any ammunition therefor, or to prohibit any transportation of firearms or ammunition in commerce.

(d) **LIMITATION ON AUTHORITY.**—Except when the Secretary determines that an emergency exists, exemptions or renewals granted pursuant to this section shall be the only means by which a person subject to the requirements of this title may be exempted from or relieved of the obligation to meet any requirements imposed under this title.

TRANSPORTATION OF RADIOACTIVE MATERIALS ON PASSENGER-CARRYING AIRCRAFT

SEC. 108. (a) GENERAL.—Within 120 days after the date of enactment of this section, the Secretary shall issue regulations, in accordance with this section and pursuant to section 105 of this title, with respect to the transportation of radioactive materials on any passenger-carrying aircraft in air commerce, as defined in section 101(4) of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1301(4)). Such regulations shall prohibit any transportation of radioactive materials on any such aircraft unless the radioactive materials involved are intended for use in, or incident to, research, or medical diagnosis or treatment, so long as such materials as prepared for and during transportation do not pose an unreasonable hazard to health and safety. The Secretary shall further establish effective procedures for monitoring and enforcing the provisions of such regulations.

(b) **DEFINITION.**—As used in this section, "radioactive material" means any materials or combination of materials which spontaneously or by inducing radiation. The term does not include materials in which the estimated specific activity is not greater than 0.002 microcuries per gram of material; and (2) the radiation is distributed in an essentially uniform manner.

POWERS AND DUTIES OF THE SECRETARY

SEC. 109. (a) GENERAL.—The Secretary is authorized, to the extent necessary to carry out his responsibilities under this title, to conduct investigations, make reports, issue subpoenas, conduct hearings, require the production of relevant documents, records, and property, take depositions, and conduct, directly or indirectly, research, development, demonstration, and training activities. The Secretary is further authorized, after notice and an opportunity for a hearing, to issue orders directing compliance with this title or regulations issued under this title; the district courts of the United States shall have jurisdiction, upon petition by the Attorney General, to enforce such orders by appropriate means.

(b) **RECORDS.**—Each person subject to requirements under this title shall establish and maintain such records, make such reports, and provide such information as the Secretary shall by order or regulation prescribe, and shall submit such reports and shall make such records and information available as the Secretary may request.

(c) **INSPECTION.**—The Secretary may authorize any officer, employee, or agent to enter upon, inspect, and examine, at reasonable times and in a reasonable manner, the records and properties of persons to the extent such records and properties relate to—

(1) the manufacture, fabrication, marking, maintenance, reconditioning, repair, testing, or destruction of packages or containers for use by any person in the transportation of hazardous materials in commerce; or

(2) the transportation or shipment by any person of hazardous materials in commerce.

Any such officer, employee, or agent shall, upon request, display proper credentials.

(d) **FACILITIES AND DUTIES.**—The Secretary shall—

(1) establish and maintain facilities and technical staff sufficient to provide, within the Federal government, the capability of evaluating risks connected with the transportation of hazardous materials and materials alleged to be hazardous;

(2) establish and maintain a central reporting system and data center so as to be able to provide the law-enforcement and firefighting personnel of communities, and other interested persons and government officers, with technical and other information and advice for meeting emergencies connected with the transportation of hazardous materials; and

(3) conduct a continuing review of all aspects of the transportation of hazardous materials in order to determine and to be able to recommend appropriate steps to assure the safe transportation of hazardous materials.

(e) **ANNUAL REPORT.**—The Secretary shall prepare and submit to the President for transmittal to the Congress on or before May 1 of each year a comprehensive report on the transportation of hazardous materials during the preceding calendar year. Such report shall include, but need not be limited to—

(1) a thorough statistical compilation of any accidents and casualties involving the transportation of hazardous materials;

(2) a list and summary of applicable Federal regulations, criteria, orders, and exemptions in effect;

(3) a summary of the basis for any exemptions granted or maintained;

(4) an evaluation of the effectiveness of enforcement activities and the degree of voluntary compliance with applicable regulations;

(5) a summary of outstanding problems confronting the administration of this title, in order of priority; and

(6) such recommendations for additional legislation as are deemed necessary or appropriate.

PENALTIES

SEC. 110. (a) CIVIL.—(1) Any person (except an employee who acts without knowledge) who is determined by the Secretary, after notice and an opportunity for a hearing, to have knowingly committed an act which is a violation of a provision of this title or of a regulation issued under this title, shall be liable to the United States for a civil penalty. Whoever knowingly commits an act which is a violation of any regulation, applicable to any person who transports or causes to be transported or shipped hazardous materials, shall be liable to a civil penalty of not more than \$10,000 for each violation, and if any such violation is a continuing one, each day of violation constitutes a separate offense. Whoever knowingly commits an act which is a violation of any regulation applicable to any person who manufactures, fabricates, marks, maintains, reconditions, repairs, or tests a package or container which is represented, marked, certified, or sold by such

person for use in the transportation in commerce of hazardous materials shall be subject to a civil penalty of not more than \$10,000 for each violation. The amount of any such penalty shall be assessed by the Secretary by written notice. In determining the amount of such penalty, the Secretary shall take into account the nature, circumstances, extent, and gravity of the violation committed and, with respect to the person found to have committed such violation, the degree of culpability, any history of prior offenses, ability to pay, effect on ability to continue to do business, and such other matters as justice may require.

(2) Such civil penalty may be recovered in an action brought by the Attorney General on behalf of the United States in the appropriate district court of the United States or, prior to referral to the Attorney General, such civil penalty may be compromised by the Secretary.

The amount of such penalty, when finally determined (or agreed upon in compromise), may be deducted from any sums owed by the United States to the person charged. All penalties collected under this subsection shall be deposited in the Treasury of the United States as miscellaneous receipts.

(b) **CRIMINAL.**—A person is guilty of an offense if he willfully violates a provision of this title or a regulation issued under this title. Upon conviction, such person shall be subject, for each offense, to a fine of not more than \$25,000, imprisonment for a term not to exceed 5 years, or both.

SPECIFIC RELIEF

SEC. 111. (a) GENERAL.—The Attorney General, at the request of the Secretary, may bring an action in an appropriate district court of the United States for equitable relief to redress a violation by any person of a provision of this title, or an order or regulation issued under this title. Such district courts shall have jurisdiction to determine such actions and may grant such relief as is necessary or appropriate, including mandatory or prohibitive injunctive relief, interim equitable relief, and punitive damages.

(b) **IMMINENT HAZARD.**—If the Secretary has reason to believe that an imminent hazard exists, he may petition an appropriate district court of the United States, or upon his request the Attorney General shall so petition, for an order suspending or restricting the transportation of the hazardous material responsible for such imminent hazard, such other order as is necessary to eliminate or ameliorate such imminent hazard. As used in this subsection, an "imminent hazard" exists if there is substantial likelihood that serious harm will occur prior to the completion of an administrative hearing or other formal proceeding initiated to abate the risk of such harm.

RELATIONSHIP TO OTHER LAWS

SEC. 112. (a) GENERAL.—Except as provided in subsection (b) of this section, any requirement of a State or political subdivision thereof, which is inconsistent with any requirement set forth in this title, or in a regulation issued under this title, is preempted.

(b) **STATE LAWS.**—Any requirement, of a State or political subdivision thereof, which is not consistent with any requirement set forth in this title, or in a regulation issued under this title, is not preempted if, upon the application of an appropriate State agency, the Secretary determines, in accordance with procedures to be prescribed by regulation, that such requirement (1) affords an equal or greater level of protection to the public than is afforded by the requirements of this title or of regulations issued under this title and (2) does not unreasonably burden commerce. Such requirement shall not be preempted to the extent specified in such determination by the Secretary for so long as such State or political subdivision thereof continues to administer and enforce effectively such requirement.

(c) **OTHER FEDERAL LAWS.**—The provisions of this title shall not apply to pipelines which are subject to regulation under the Natural Gas Pipeline Safety Act of 1968 (49 U.S.C. 1671 et seq.) or to pipelines which are subject to regulation under chapter 39 of title 18, United States Code.

CONFORMING AMENDMENTS

SEC. 113. (a) Section 4472 of title 52 of the Revised Statutes of the United States, as amended (46 U.S.C. 170) is amended—

(1) by inserting, in the first sentence of paragraph (14) thereof, "criminal" before the word "and"; and "or imprisonment not more than 5 years, or both" before the word "for each violation"; and

(2) by adding at the end thereof the following new paragraph:

(17) (A) Any person (except an employee who acts without knowledge) who is determined by the Secretary, after notice and an opportu-

nity for a hearing, to have knowingly committed an act which is a violation of any provision of this section, or of any regulation issued under this section, shall be liable to the United States for a civil penalty of not more than \$10,000 for each day of each violation. The amount of such civil penalty shall be assessed by the Secretary by written notice. In determining the amount of such penalty, the Secretary shall take into account the nature, circumstances, extent, and gravity of the violation committed and, with respect to the person found to have committed such violation, the degree of culpability, any history of prior offenses, ability to pay, effect on ability to continue to do business, and such other matters as justice may require.

(B) Such civil penalty may be recovered in an action brought by the Attorney General on behalf of the United States, in the appropriate district court of the United States or, prior to referral to the Attorney General, such civil penalty may be compromised by the Secretary. The amount of such penalty, when finally determined (or agreed upon in compromise), may be deducted from any sums owed by the United States to the person charged. All penalties collected under this subsection shall be deposited in the Treasury of the United States as miscellaneous receipts."

(b) Section 901(a)(1) of the Federal Aviation Act of 1958 (49 U.S.C. 1471(a)(1)) is amended—

(1) by inserting immediately before the period at the end of the first sentence thereof and inserting in lieu thereof: "except that the amount of such civil penalty shall not exceed \$10,000 for each such violation which relates to the transportation of hazardous materials."; and

(2) by deleting in the second sentence thereof: "Provided, That this" and inserting in lieu thereof the following: "The amount of any such civil penalty which relates to the transportation of hazardous materials shall be assessed by the Secretary, or his delegate, upon written notice upon a finding of violation by the Secretary, after notice and an opportunity for a hearing. In determining the amount of such penalty, the Secretary shall take into account the nature, circumstances, extent, and gravity of the violation committed and, with respect to the person found to have committed such violation, the degree of culpability, any history of prior offenses, ability to pay, effect on ability to continue to do business, and such other matters as justice may require. This".

(c) Section 902(h) of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1472(h)) is amended to read as follows:

"HAZARDOUS MATERIALS

"(h)(1) In carrying out his responsibilities under this Act, the Secretary of Transportation may exercise the authority vested in him by section 105 of the Hazardous Materials Transportation Act to provide by regulation for the safe transportation of hazardous materials by air.

"(2) A person is guilty of an offense if he willfully delivers or causes to be delivered to an air carrier or to the operator of a civil aircraft for transportation in air commerce, or if he recklessly causes the transportation in air commerce of, any shipment, baggage, or other property which contains a hazardous material, in violation of any rule, regulation, or requirement with respect to the transportation of hazardous materials issued by the Secretary of Transportation under this Act. Upon conviction, such person shall be subject, for each offense, to a fine of not more than \$25,000, imprisonment for a term not to exceed 5 years, or both.

"(3) Nothing in this subsection shall be construed to prohibit or regulate the transportation by any individual, for personal use, of any firearm (as defined in paragraph (4) of section 232 of title 18, United States Code) or any ammunition therefor."

(d) Section 6(c)(1) of the Department of Transportation Act (49 U.S.C. 1655(c)(1)) is amended by inserting in the first sentence thereof after "aviation safety" and before "as set forth in" the following: "(other than those relating to the transportation, packaging, marking, or description of hazardous materials)".

(e) (1) Section 6(f)(3)(A) of the Department of Transportation Act (49 U.S.C. 1655(f)(3)(A)) is amended by striking out the period at the end thereof and by inserting in lieu thereof "(other than subsection (e)(4))".

(2) Section 6(f)(3)(B) of the Department of Transportation Act (49 U.S.C. 1655(f)(3)(B)) is amended by striking out the period at the end thereof and by inserting in lieu thereof "(other than subsection (e)(4))".

(f) Section 101 of section 4472 of the Revised Statutes, as amended (46 U.S.C. 170(6)), is amended—

(1) in paragraph (a) thereof, by striking out "inflammable" each place it appears and inserting in lieu thereof at each such

place "flammable"; by inserting before "liquids" the following: "or combustible"; and by deleting the colon and the proviso in its entirety and by inserting in lieu thereof a period and the following two new sentences: "The provisions of this subsection shall apply to the transportation, carriage, conveyance, storage, stowing, or use on board any passenger vessel of any barrel, drum, or other package containing any flammable or combustible liquid which has a lower flash point than that which is defined as safe pursuant to regulations establishing the defining flash-point criteria for flammable and combustible liquids. Such regulations shall be prescribed, and revised as necessary, by the Secretary of Transportation."

(2) in paragraph (b) thereof, by striking out in clause (iv) thereof "inflammable liquids" and inserting in lieu thereof "flammable or combustible liquids".

(g) The Hazardous Materials Transportation Control Act of 1970 (Pub. L. 91-458, title III; 49 U.S.C. 1761-1762) is repealed.

EFFECTIVE DATE

SEC. 114. (a) Except as provided in this section, the provisions of this title shall take effect on the date of enactment.

(b) (1) Except as provided in section 108 of this title or paragraph (2) of this subsection, any order, determination, rule, regulation, permit, contract, certificate, license, or privilege issued, granted, or otherwise authorized or allowed, prior to the date of enactment of this title, pursuant to any provision of law amended or repealed by this title, shall continue in effect according to its terms or until repealed, terminated, withdrawn, amended, or modified by the Secretary or a court of competent jurisdiction.

(2) The Secretary shall take all steps necessary to bring orders, determinations, rules, and regulations into conformity with the purposes and provisions of this title as soon as practicable, but in any event no permits, contracts, certificates, licenses, or privileges granted prior to the date of enactment of this title, or renewed or extended thereafter, shall be of any effect more than 2 years after the date of enactment of this title, unless there is full compliance with the purposes and provisions of this Act and regulations thereunder.

(c) Proceedings pending upon the date of enactment of this title shall not be affected by the provisions of this title and shall be completed as if this title had not been enacted, unless the Secretary makes a determination that the public health and safety otherwise require.

AUTHORIZATION FOR APPROPRIATIONS

SEC. 115. There is authorized to be appropriated¹ for the purposes of this title, not to exceed \$7,000,000 for the fiscal year ending June 30, 1975.

TOXIC SUBSTANCE CONTROL ACT

Synopsis: Signed by President Ford on October 11, 1976, effective January 1, 1977.

Act extends federal authority for regulation of the chemical industry. The basic purpose of the act is to regulate chemical substances that present a hazard to health or the environment. The act broadens the area covered by regulation. Its mechanism of control is the regulation of chemicals in commerce, without regard to specific use or area of application.

Impact of the Act: Overall, it creates new requirements for testing, reporting, and recordkeeping.

Specific Area Impact

Manufacturers/Processors/Distributors: Increased recordkeeping to insure compliance in identifying chemicals and their uses, giving amount produced, estimated occupational exposure and method of disposal, also requires that records be kept on adverse reactions resulting from the use of the chemical.

Importers/Exporters:

Importers - By definition, they are subject to the same regulations placed upon the manufacturer.

Exporters - Generally exempt from all requirements of the Act, except recordkeeping and reporting.

E.P.A. - Charged with responsibility for administering the Act. Most duties assigned under the Act are mandatory.

Other Agencies - Very little effect on other federal agencies. Most are involved only in an advisory status.

DOD & DON - No direct responsibilities in terms of administration, but like all federal agencies, both must comply with the provisions of the Act.

Requirements Under the Act

1. Requires manufacturers and processors to test substances according to guidelines set up by the E.P.A.
2. Requires notification of new chemicals or new uses for existing mixtures 90 days in advance of commercial production.
3. Act authorizes delays or restrictions of new chemical substances if there is inadequate information to evaluate the effects of the substance.
4. Requires manufacturer to submit reports and maintain records inspecting environmental and health effects.
5. Permits administrative inspections to enforce the bill and authorizes court actions for seizure of chemicals which have been manufactured or distributed in violation of the bill.
6. Permits citizens to bring suits to obtain compliance with the bill.
7. Permits federal district courts to order the administrator to initiate rulemaking proceedings in response to citizen petitions.
8. Provides protection for employees who cooperate in the enforcement of the bill.
9. Provide for evaluation on a continuing basis of the effects on employment of actions taken under the bill.

Training Materials

Toxic Substance Control Act - Bureau of National Affairs, Inc.,
Washington, DC

FEDERAL INSECTICIDE, FUNGICIDE,
and RODENTICIDE ACT

Synopsis: Enacted in 1947 and provided that an "economic poison" otherwise defined as a chemical pesticide must be registered before being marketed, and required effective labeling to protect consumers from ineffective and dangerous products.

Impact: Labeling of pesticides was the primary thrust of the Insecticide Act of 1910 and was adopted as the credo of control of the Federal Insecticide, Fungicide, and Rodenticide Act of 1947. Companies were required to provide adequate labeling of products to aid consumers in avoiding adulterated, misbranded, or unregistered chemicals. Manufacturers were also required to include in the labeling, directions for use which if complied with were adequate for the protection of the public.

Requirements Under the Act:

1. Companies would conform to requirements to avoid misbranding of products under three major provisions.

a. A product was defined as misbranded if the labeling accompanying it did not contain directions for use which if complied with was adequate to prevent injury to living man and other vertebrate animals, vegetation, and useful invertebrate animals.

b. A product was misbranded if the labeling did not contain directions for use which if complied with were adequate for the protection of the public.

c. Misbranding resulted if when used as directed or in accordance with commonly recognized practice the pesticide shall be injurious to

living man or other vertebrate animals, or vegetation, except weeds to which the product is applied, or to the person applying it.

2. Criminal penalties were now prescribed for violations of provisions.

3. The United States could go to court to seize and dispose of products that were adulterated, misbranded, or unregistered.

4. Product registration for products marketed in interstate commerce was required and could be revoked for violation of labeling requirements.

5. Labeling must include prominently and conspicuously placed directions for use, warning or caution, and an ingredient statement.

RESOURCE CONSERVATION AND RECOVERY ACT OF 1976

(Enacted by PL 94-580, October 21, 1976; 90 Stat. 95, 42 U.S.C. 3251 et seq, recodified as 42 U.S.C. 6901 et seq; Amended by PL 95-609, November 8, 1978; PL 96-463, October 15, 1980; PL 96-482, October 21, 1980; PL 96-510, December 11, 1980)

[*Editor's note:* The Resource Conservation and Recovery Act of 1976, PL 94-580, completely replaced the previous language of the Solid Waste Disposal Act.

Public Law 96-463 (S2412) enacted the "Used Oil Recycling Act of 1980." Sections 3, 4(a) and (b), and 5 through 7 of the Act amended the Resource Conservation and Recovery Act and their provisions have been incorporated into the main text of this Act. Except for the enacting language, the remaining sections further clarify container labeling requirements and prescribe additional responsibilities of the EPA administrator. Those sections are published at the end of this Act.]

AN ACT

To provide technical and financial assistance for the development of management plans and facilities for the recovery of energy and other resources from discarded materials and for the safe disposal of discarded materials, and to regulate the management of hazardous waste.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Short Title

Section 1. This Act may be cited as the "Resource Conservation and Recovery Act of 1976."

Amendment of Solid Waste Disposal Act

Sec. 2. The Solid Waste Disposal Act (42 U.S.C. 3251 and following) is amended to read as follows:

"TITLE II—SOLID WASTE DISPOSAL

"Subtitle A—General Provisions

"Short Title and Table of Contents

"Sec. 1001. This title (hereinafter in this title referred to as 'this Act'), together with the following table of contents, may be cited as the 'Solid Waste Disposal Act':

"Subtitle A—General Provisions

- "Sec. 1001. Short title and table of contents.
- "Sec. 1002. Congressional findings.
- "Sec. 1003. Objectives.
- "Sec. 1004. Definitions.
- "Sec. 1005. Governmental cooperation.
- "Sec. 1006. Application of Act and integration with other Acts.
- "Sec. 1007. Financial disclosure.
- "Sec. 1008. Solid waste management information and guidelines.

"Subtitle B—Office of Solid Waste; Authorities of the Administrator

- "Sec. 2001. Office of Solid Waste and interagency coordinating committee.
- "Sec. 2002. Authorities of Administrator.
- "Sec. 2003. Resource recovery and conservation panels.
- "Sec. 2004. Grants for discarded tire disposal.
- "Sec. 2005. Labeling of certain oil.
- "Sec. 2006. Annual report.
- "Sec. 2007. General authorization.

"Subtitle C—Hazardous Waste Management

- "Sec. 3001. Identification and listing of hazardous waste.
- "Sec. 3002. Standards applicable to generators of hazardous waste.
- "Sec. 3003. Standards applicable to transporters of hazardous waste.
- "Sec. 3004. Standards applicable to owners and operators of hazardous waste treatment, storage, and disposal facilities.
- "Sec. 3005. Permits for treatment, storage, or disposal of hazardous waste.
- "Sec. 3006. Authorized State hazardous waste programs.

- "Sec. 3007. Inspections.
- "Sec. 3008. Federal enforcement.
- "Sec. 3009. Retention of State authority.
- "Sec. 3010. Effective date.
- "Sec. 3011. Authorization of assistance to States.
- "Sec. 3012. Restrictions on recycled oil.
- "Sec. 3012. Hazardous waste site inventory.
- "Sec. 3013. Monitoring, analysis, and testing.

"Subtitle D—State or Regional Solid Waste Plans

- "Sec. 4001. Objectives of subtitle.
- "Sec. 4002. Federal guidelines for plans.
- "Sec. 4003. Minimum requirements for approval of plans.
- "Sec. 4004. Criteria for sanitary landfills; sanitary landfills required for all disposal.
- "Sec. 4005. Upgrading of open dumps.
- "Sec. 4006. Procedure for development and implementation of State plan.
- "Sec. 4007. Approval of State plan; Federal assistance.
- "Sec. 4008. Federal assistance.
- "Sec. 4009. Rural communities assistance.

"Subtitle E—Duties of the Secretary of Commerce in Resource and Recovery

- "Sec. 5001. Functions.
- "Sec. 5002. Development of specifications for secondary materials.
- "Sec. 5003. Development of markets for recovered materials.
- "Sec. 5004. Technology promotion.
- "Sec. 5005. Nondiscrimination requirement.
- "Sec. 5006. Authorization of appropriations.

"Subtitle F—Federal Responsibilities

- "Sec. 6001. Application of Federal, State, and local law to Federal facilities.
- "Sec. 6002. Federal procurement.
- "Sec. 6003. Cooperation with Environmental Protection Agency.
- "Sec. 6004. Applicability of solid waste disposal guidelines to executive agencies.

"Subtitle G—Miscellaneous Provisions

- "Sec. 7001. Employee protection.
- "Sec. 7002. Citizen suits.
- "Sec. 7003. Imminent hazard.
- "Sec. 7004. Petition for regulations; public participation.
- "Sec. 7005. Separability.
- "Sec. 7006. Judicial review.
- "Sec. 7007. Grants or contracts for training projects.
- "Sec. 7008. Payments.
- "Sec. 7009. Labor standards.

"Subtitle H—Research, Development, Demonstration, and Information

- "Sec. 8001. Research, demonstrations, training, and other activities.
- "Sec. 8002. Special studies; plans for research, development, and demonstrations.
- "Sec. 8003. Coordination, collection, and dissemination of information.
- "Sec. 8004. Full-scale demonstration facilities.
- "Sec. 8005. Special study and demonstration projects on recovery of useful energy and materials.
- "Sec. 8006. Grants for resource recovery systems and improved solid waste disposal facilities.
- "Sec. 8007. Authorization of appropriations.

"Congressional Findings

"Sec. 1002. (a) Solid Waste.—The Congress finds with respect to solid waste—

"(1) that the continuing technological progress and improvement in methods of manufacture, packaging, and marketing of consumer products has resulted in an ever-mounting increase, and in a change in the characteristics, of the mass material discarded by the purchaser of such products;

"(2) that the economic and population growth of our Nation, and the improvements in the standard of living enjoyed by our population, have required increased industrial production to meet our needs, and have made necessary the demolition of old buildings, the construction of new buildings, and the provision of highways and other avenues of transportation, which, together with related industrial, commercial, and agricultural operations, have resulted in a rising tide of scrap, discarded, and waste materials;

"(3) that the continuing concentration of our population in expanding metropolitan and other urban areas has presented these communities with serious financial, management, intergovernmental, and technical problems in the disposal of solid wastes resulting from the industrial, commercial, domestic, and other activities carried on in such areas;

"(4) that while the collection and disposal of solid wastes should continue to be primarily the function of State, regional, and local agencies, the problems of waste disposal as set forth above have become a matter national in scope and in concern and necessitate Federal action through financial and technical assistance and leadership in the development, demonstration, and application of new and improved methods and processes to reduce the amount of waste and unsalvageable materials and to provide for proper and economical solid waste disposal practices.

"(b) Environment and Health.—The Congress finds with respect to the environment and health, that—

"(1) although land is too valuable a national resource to be needlessly polluted by discarded materials, most solid waste is disposed of on land in open dumps and sanitary landfills;

"(2) disposal of solid waste and hazardous waste in or on the land without careful planning and management can present a danger to human health and the environment;

"(3) as a result of the Clean Air Act, the Water Pollution Control Act, and other Federal and State laws respecting public health and the environment, greater amounts of solid waste (in the form of sludge and other pollution treatment residues) have been created. Similarly, inadequate and environmentally unsound practices for the disposal or use of solid waste have created greater amounts of air and water pollution and other problems for the environment and for health;

"(4) open dumping is particularly harmful to health, contaminates drinking water from underground and surface supplies, and pollutes the air and the land;

"(5) hazardous wastes presents, in addition to the problems associated with non-hazardous solid waste, special dangers to health and requires a greater degree of regulation than does non-hazardous solid waste; and

"(6) alternatives to existing methods of land disposal must be developed since many of the cities in the United States will be running out of suitable solid waste disposal sites within five years unless immediate action is taken;

"(c) Materials.—The Congress finds with respect to materials, that:

"(1) millions of tons of recoverable material which could be used are needlessly buried each year;

"(2) methods are available to separate usable materials from solid waste; and

"(3) the recovery and conservation of such materials can reduce the dependence of the United States on foreign resources and reduce the deficit in its balance of payments.

"(d) Energy.—The Congress finds with respect to energy, that—

"(1) solid waste represents a potential source of solid fuel, oil, or gas that can be converted into energy;

"(2) the need exists to develop alternative energy sources for public and private consumption in order to reduce our dependence on such sources as petroleum products, natural gas, nuclear and hydroelectric generation; and

"(3) technology exists to produce usable energy from solid waste.

"Objectives

"Sec. 1003. The objectives of this Act are to promote the protection of health and the environment and to conserve valuable material and energy resources by—

"(1) providing technical and financial assistance to State and local governments and interstate agencies for the development of solid waste management plans (including resource recovery and resource conservation systems) which will promote improved solid waste management techniques (including more effective

organizational arrangements), new and improved methods of collection, separation, and recovery of solid waste, and the environmentally safe disposal of nonrecoverable residues;

"(2) providing training grants in occupations involving the design, operation, and maintenance of solid waste disposal systems;

"(3) prohibiting future open dumping on the land and requiring the conversion of existing open dumps to facilities which do not pose a danger to the environment or to health;

"(4) regulating the treatment, storage, transportation, and disposal of hazardous wastes which have adverse effects on health and the environment;

"(5) providing for the promulgation of guidelines for solid waste collection, transport, separation, recovery, and disposal practices and systems;

"(6) promoting a national research and development program for improved solid waste management and resource conservation techniques, more effective organizational arrangements, and new and improved methods of collection, separation, and recovery, and recycling of solid wastes and environmentally safe disposal of nonrecoverable residues;

"(7) promoting the demonstration, construction, and application of solid waste management, resource recovery, and resource conservation systems which preserve and enhance the quality of air, water, and land resources; and

"(8) establishing a cooperative effort among the Federal, State, and local governments and private enterprise in order to recover valuable materials and energy from solid waste.

"Definitions

"Sec. 1004. As used in this Act:

"(1) The term 'Administrator' means the Administrator of the Environmental Protection Agency.

"(2) The term 'construction,' with respect to any project of construction under this Act, means (A) the erection or building of new structures and acquisition of lands or interests therein, or the acquisition, replacement, expansion, remodeling, alteration, modernization, or extension of existing structures, and (B) the acquisition and installation of initial equipment of, or required in connection with, new or newly acquired structures or the expanded, remodeled, altered, modernized or extended part of existing structures (including trucks and other motor vehicles, and tractors, cranes, and other machinery) necessary for the proper utilization and operation of the facility after completion of the project; and includes preliminary planning to determine the economic and engineering feasibility and the public health and safety aspects of the project, the engineering, architectural, legal, fiscal, and economic investigations and studies, and any surveys, designs, plans, working drawings, specifications, and other action necessary for

the carrying out of the project, and (C) the inspection and supervision of the process of carrying out the project to completion.

"(2)(A) The term 'demonstration' means the initial exhibition of a new technology process or practice or a significantly new combination or use of technologies, processes or practices, subsequent to the development stage, for the purpose of proving technological feasibility and cost effectiveness.

"(3) The term 'disposal' means the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters.

"(4) The term 'Federal agency' means any department, agency, or other instrumentality of the Federal Government, any independent agency or establishment of the Federal Government including any Government corporation, and the Government Printing Office.

"(5) The term 'hazardous waste' means a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may—

"(A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

"(B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

"(6) The term 'hazardous waste generation' means the act or process of producing hazardous waste.

"(7) The term 'hazardous waste management' means the systematic control of the collection, source separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous wastes.

"(8) For purposes of Federal financial assistance (other than rural communities assistance), the term 'implementation' does not include the acquisition, leasing, construction, or modification of facilities or equipment or the acquisition, leasing, or improvement of land.

"(9) The term 'intermunicipal agency' means an agency established by two or more municipalities with responsibility for planning or administration of solid waste.

"(10) The term 'interstate agency' means an agency of two or more municipalities in different States, or an agency established by two or more States, with authority to provide for the management of solid wastes and serving two or more municipalities located in different States.

"(11) The term 'long-term contract' means, when used in relation to solid waste supply, a contract of sufficient duration to assure the viability of a resource recovery facility (to the extent that such viability depends upon solid waste supply).

"(12) The term 'manifest' means the form used for identifying the quantity, composition, and the origin, routing, and destination of hazardous waste during its transportation from the point of generation to the point of disposal, treatment, or storage.

"(13) The term 'municipality' (A) means a city, town, borough, county, parish, district, or other public body created by or pursuant to State law, with responsibility for the planning or administration of solid waste management, or an Indian tribe or authorized tribal organization or Alaska Native village or organization, and (B) includes any rural community or unincorporated town or village or any other public entity for which an application for assistance is made by a State or political subdivision thereof.

"(14) The term 'open dump' means any facility or site where solid waste is disposed of which is not a sanitary landfill which meets the criteria promulgated under section 4004 and which is not a facility for disposal of hazardous waste.

[1004(14) revised by PL 96-482]

"(15) The term 'person' means an individual, trust, firm, joint stock company, corporation (including a government corporation), partnership, association, State, municipality, commission, political subdivision of a State, or any interstate body.

"(16) The term 'procurement item' means any device, good, substance, material, product, or other item whether real or personal property which is the subject of any purchase, barter, or other exchange made to procure such item.

"(17) The term 'procuring agency' means any Federal agency, or any State agency or agency of a political subdivision of a State which is using appropriated Federal funds for such procurement, or any person contracting with any such agency with respect to work performed under such contract.

"(18) The term 'recoverable' refers to the capability and likelihood of being recovered from solid waste for a commercial or industrial use.

"(19) The term 'recovered material' means waste material and byproducts which have been recovered or diverted from solid waste, but such terms does not include those materials and byproducts generated from, and commonly reused within, an original manufacturing process.

[1004(19) revised by PL 96-482]

"(20) The term 'recovered resources' means material or energy recovered from solid waste.

"(21) The term 'resource conservation' means reduction of the amounts of solid waste that are generated, reduction of overall resource consumption, and utilization of recovered resources.

"(22) The term 'resource recovery' means the recovery of material or energy from solid waste.

"(23) The term 'resource recovery system' means a solid waste management system which provides for collection, separation, recycling, and recovery of solid

wastes, including disposal of nonrecoverable waste residues.

"(24) The term 'resource recovery facility' means any facility at which solid waste is processed for the purpose of extracting, converting to energy, or otherwise separating and preparing solid waste for reuse.

"(25) The term 'regional authority' means the authority established or designated under section 4006.

"(26) The term 'sanitary landfill' means a facility for the disposal of solid waste which meets the criteria published under section 4004.

"(26A) The term 'sludge' means 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 or any other such waste having similar characteristics and effects.

"(27) The term 'solid waste' means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923).

"(28) The term 'solid waste management' means the systematic administration of activities which provide for the collection, source separation, storage, transportation, transfer, processing, treatment, and disposal of solid waste.

"(29) The term 'solid waste management facility' includes (A) any resource recovery system or component thereof, (B) any system, program, or facility for resource conservation, and (C) any facility for the collection, source separation, storage, transportation, transfer, processing, treatment or disposal of solid wastes including hazardous wastes, whether such facility is associated with facilities generating such wastes or otherwise.

"(30) The terms 'solid waste planning,' 'solid waste management,' and 'comprehensive planning' include planning or management respecting resource recovery and resource conservation.

"(31) The term 'State' means any of the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands.

"(32) The term 'State authority' means the agency established or designated under section 4007.

"(33) The term 'storage,' when used in connection with hazardous waste, means the containment of

hazardous waste, either on a temporary basis or for a period of years, in such a manner as not to constitute disposal of such hazardous waste.

"(34) The term 'treatment', when used in connection with hazardous waste, means any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste or so as to render such waste nonhazardous, safer for transport, amenable for recovery, amenable for storage, or reduced in volume. Such term includes any activity or processing designed to change the physical form or chemical composition of hazardous waste so as to render it nonhazardous.

"(35) The term 'virgin material' means a raw material, including previously unused copper, aluminum, lead, zinc, iron, or other metal or metal ore, any undeveloped resource that is, or with new technology will become, a source of raw materials.

"(36) The term 'used oil' means any oil which has been—

"(A) refined from crude oil,

"(B) used, and

"(C) as a result of such use, contaminated by physical or chemical impurities.

"(37) The term 'recycled oil' means any used oil which is reused, following its original use, for any purpose (including the purpose for which the oil was originally used). Such term includes oil which is re-refined, reclaimed, burned, or reprocessed.

"(38) The term 'lubricating oil' means the fraction of crude oil which is sold for purposes of reducing friction in any industrial or mechanical device. Such term includes re-refined oil.

"(39) The term 're-refined oil' means used oil from which the physical and chemical contaminants acquired through previous use have been removed through a refining process.

[1004(36) through (39) added by PL 96-463]

"Governmental Cooperation

"Sec. 1005. (a) Interstate Cooperation.—The provisions of this Act to be carried out by States may be carried out by interstate agencies and provisions applicable to States may apply to interstate regions where such agencies and regions have been established by the respective States and approved by the Administrator. In any such case, action required to be taken by the Governor of a State, respecting regional designation shall be required to be taken by the Governor of each of the respective States with respect to so much of the interstate region as is within the jurisdiction of that State.

"(b) Consent of Congress to Compacts.—The Consent of the Congress is hereby given to two or more States to negotiate and enter into agreements or compacts, not in conflict with any law or treaty of the United States, for—

"(1) cooperative effort and mutual assistance for the

management of solid waste or hazardous waste (or both) and the enforcement of their respective laws relating thereto, and

"(2) the establishment of such agencies, joint or otherwise, as they may deem desirable for making effective such agreements or compacts.

No such agreement or compact shall be binding or obligatory upon any State a party thereto unless it is agreed upon by all parties to the agreement and until it has been approved by the Administrator and the Congress.

"Application of Act and Integration with Other Acts

"Sec. 1006. (a) Application of Act.—Nothing in this Act shall be construed to apply to (or to authorize any State, interstate, or local authority to regulate) any activity or substance which is subject to the Federal Water Pollution Control Act (33 U.S.C. 1151 and following), the Safe Drinking Water Act (42 U.S.C. 300f and following), the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1401 and following), or the Atomic Energy Act of 1954 (42 U.S.C. 2011 and following) except to the extent that such application (or regulation) is not inconsistent with the requirements of such Acts.

"(b) Integration With Other Acts.—The Administrator shall integrate all provisions of this Act for purposes of administration and enforcement and shall avoid duplication, to the maximum extent practicable, with the appropriate provisions of the Clean Air Act (42 U.S.C. 1857 and following), the Federal Water Pollution Control Act (33 U.S.C. 1151 and following), the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 135 and following), the Safe Drinking Water Act (42 U.S.C. 300f and following), the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1401 and following) and such other Acts of Congress as grant regulatory authority to the Administrator. Such integration shall be effected only to the extent that it can be done in a manner consistent with the goals and policies expressed in this Act and in the other acts referred to in this subsection.

"(c) Integration With the Surface Mining Control and Reclamation Act of 1977.—(1) No later than 90 days after the date of enactment of the Solid Waste Disposal Act Amendments of 1980, the Administrator shall review any regulations applicable to the treatment, storage, or disposal of any coal mining wastes or overburden promulgated by the Secretary of the Interior under the Surface Mining and Reclamation Act of 1977. If the Administrator determines that any requirement of final regulations promulgated under any section of subtitle C relating to mining wastes or overburden is not adequately addressed in such regulations promulgated by the Secretary, the Administrator shall promptly transmit such determination, together with suggested

revisions and supporting documentation, to the Secretary.

"(2) The Secretary of the Interior shall have exclusive responsibility for carrying out any requirement of subtitle C of this Act with respect to coal mining wastes or overburden for which a surface coal mining and reclamation permit is issued or approved under the Surface Mining Control and Reclamation Act of 1977. The Secretary shall, with the concurrence of the Administrator, promulgate such regulations as may be necessary to carry out the purposes of this subsection and shall integrate such regulations with regulations promulgated under the Surface Mining Control and Reclamation Act of 1977.

[1006(c) added by PL 96-482]

"Financial Disclosure

"Sec. 1007. (a) Statement.—Each officer or employee of the Administrator who—

"(1) performs any function or duty under this Act; and

"(2) has any known financial interest in any person who applies for or receives financial assistance under this Act

shall beginning on February 1, 1977, annually file with the Administrator a written statement concerning all such interests held by such officer or employee during the preceding calendar year. Such statement shall be available to the public.

"(b) Action by Administrator.—The Administrator shall—

"(1) act within ninety days after the date of enactment of this Act—

"(A) to define the term 'known financial interest' for purposes of subsection (a) of this section; and

"(B) to establish the methods by which the requirement to file written statements specified in subsection (a) of this section will be monitored and enforced, including appropriate provision for the filing by such officers and employees of such statements and the review by the Administrator of such statements; and

"(2) report to the Congress on June 1, 1978, and of each succeeding calendar year with respect to such disclosures and the actions taken in regard thereto during the preceding calendar year.

"(c) Exemption.—In the rules prescribed under subsection (b) of this section, the Administrator may identify specific positions within the Environmental Protection Agency which are of a nonpolicymaking nature and provide that officers or employees occupying such positions shall be exempt from the requirements of this section.

"(d) Penalty.—Any officer or employee who is subject to, and knowingly violates, this section shall be fined not more than \$2,500 or imprisoned not more than one year, or both.

"Solid Waste Management Information and Guidelines

"Sec. 1008. (a) Guidelines.—Within one year of enactment of this section, and from time to time thereafter, the Administrator shall, in cooperation with appropriate Federal, State, municipal, and inter-municipal agencies, and in consultation with other interested persons, and after public hearings, develop and publish suggested guidelines for solid waste management. Such suggested guidelines shall—

"(1) provide a technical and economic description of the level of performance that can be attained by various available solid waste management practices (including operating practices) which provide for the protection of public health and the environment;

"(2) not later than two years after the enactment of this section, describe levels of performance, including appropriate methods and degrees of control, that provide at a minimum for (A) protection of public health and welfare; (B) protection of the quality of ground waters and surface waters from leachates; (C) protection of the quality of surface waters from runoff through compliance with effluent limitations under the Federal Water Pollution Control Act, as amended; (D) protection of ambient air quality through compliance with new source performance standards or requirements of air quality implementation plans under the Clean Air Act, as amended; (E) disease and vector control; (F) safety; and (G) esthetics; and

"(3) provide minimum criteria to be used by the States to define those solid waste management practices which constitute the open dumping of solid waste or hazardous waste and are to be prohibited under subtitle D of this Act.

Where appropriate, such suggested guidelines also shall include minimum information for use in deciding the adequate location, design, and construction of facilities associated with solid waste management practices, including the consideration of regional, geographic, demographic, and climatic factors.

"(b) Notice.—The Administrator shall notify the Committee on Public Works of the Senate and the Committee on Interstate and Foreign Commerce of the House of Representatives a reasonable time before publishing any suggested guidelines or proposed regulations under this act of the content of such proposed suggested guidelines or proposed regulations under this Act.

"Subtitle B—Office of Solid Waste; Authorities of the Administrator

"Office of Solid Waste and Interagency Coordinating Committee

"Sec. 2001.(a) Office of Solid Waste.—The Administrator shall establish within the Environmental Protection Agency an Office of Solid Waste (hereinafter referred to as the 'Office') to be headed by an Assistant Ad-

ministrator of the Environmental Protection Agency. The duties and responsibilities (other than duties and responsibilities relating to research and development) of the Administrator under this Act (as modified by applicable reorganization plans) shall be carried out through the Office.

[2001(a) designated by PL 96-482; amended by PL 96-510, effective March 10, 1981]

[See also Sec. 307(b) of PL 96-510, p. 71:0701]

"(b) Interagency Coordinating Committee.—(1) There is hereby established an Interagency Coordinating Committee on Federal Resource Conservation and Recovery Activities which shall have the responsibility for coordinating all activities dealing with resource conservation and recovery from solid waste carried out by the Environmental Protection Agency, the Department of Energy, the Department of Commerce, and all other Federal agencies which conduct such activities pursuant to this or any other Act. For purposes of this subsection, the term 'resource conservation and recovery activities' shall include, but not be limited to, all research, development and demonstration projects on resource conservation or energy, or material, recovery from solid waste, and all technical or financial assistance for State or local planning for, or implementation of, projects related to resource conservation or energy or material, recovery from solid waste. The Committee shall be chaired by the Administrator of the Environmental Protection Agency or such person as the Administrator may designate. Members of the Committee shall include representatives of the Department of Energy, the Department of Commerce, the Department of the Treasury, and each other Federal agency which the Administrator determines to have programs or responsibilities affecting resource conservation or recovery.

"(2) The Interagency Coordinating Committee shall include oversight of the implementation of

"(A) the May 1979 Memorandum of Understanding on Energy Recovery from Municipal Solid Waste between the Environmental Protection Agency and the Department of Energy;

"(B) the May 30, 1978, Interagency Agreement between the Department of Commerce and the Environmental Protection Agency on the Implementation of the Resource Conservation and Recovery Act; and

"(C) any subsequent agreements between these agencies or other Federal agencies which address Federal resource recovery or conservation activities.

"(3) The Interagency Coordinating Committee shall submit to the Congress by March 1, 1981, and on March 1 each year thereafter, a five-year action plan for Federal resource conservation or recovery activities which shall identify means and propose programs to encourage resource conservation or material and energy recovery and increase private and municipal investment in resource conservation or recovery systems, especially those which provide for material conservation or

recovery as well as energy conservation or recovery. Such plan shall describe, at a minimum, a coordinated and nonduplicatory plan for resource recovery and conservation activities for the Environmental Protection Agency, the Department of Energy, the Department of Commerce, and all other Federal agencies which conduct such activities.

"Authorities of Administrator

"Sec. 2002. (a) Authorities.—In carrying out this Act, the Administrator is authorized to—

"(1) prescribe, in consultation with Federal, State, and regional authorities, such regulations as are necessary to carry out his functions under this Act;

"(2) consult with or exchange information with other Federal agencies undertaking research, development, demonstration projects, studies, or investigations relating to solid waste;

"(3) provide technical and financial assistance to States or regional agencies in the development and implementation of solid waste plans and hazardous waste management programs;

"(4) consult with representatives of science, industry, agriculture, labor, environmental protection and consumer organizations, and other groups, as he deems advisable;

"(5) utilize the information, facilities, personnel and other resources of Federal agencies, including the National Bureau of Standards and the National Bureau of the Census, on a reimbursable basis, to perform research and analyses and conduct studies and investigations related to resource recovery and conservation and to otherwise carry out the Administrator's functions under this Act; and

"(6) to delegate to the Secretary of Transportation the performance of any inspection or enforcement function under this Act relating to the transportation of hazardous waste where such delegation would avoid unnecessary duplication of activity and would carry out the objectives of this Act and of the Hazardous Materials Transportation Act.

[2002(a)(6) added by PL 96-482]

"(b) Revision of Regulations.—Each regulation promulgated under this Act shall be reviewed and, where necessary, revised not less frequently than every three years.

"Resource Recovery and Conservation Panels

"Sec. 2003. The Administrator shall provide teams of personnel, including Federal, State, and local employees or contractors (hereinafter referred to as 'Resource Conservation and Recovery Panels') to provide Federal agencies, States and local governments upon request with technical assistance on solid waste management, resource recovery, and resource conservation. Such teams shall include technical, marketing, financial, and institutional specialists, and the services of such teams

shall be provided without charge to States or local governments.

"Grants for Discarded Tire Disposal

"Sec. 2004. (a) Grants.—The Administrator shall make available grants equal to 5 percent of the purchase price of tire shredders (including portable shredders attached to tire collection trucks) to those eligible applicants best meeting criteria promulgated under this section. An eligible applicant may be any private purchaser, public body, or public-private joint venture. Criteria for receiving grants shall be promulgated under this section and shall include the policy to offer any private purchaser the first option to receive a grant, the policy to develop widespread geographic distribution of tire shredding facilities, the need for such facilities within a geographic area, and the projected risk and viability of any such venture. In the case of an application under this section from a public body, the Administrator shall first make a determination that there are no private purchasers interested in making an application before approving a grant to a public body.

"(b) Authorization.—There is authorized to be appropriated \$750,000 for each of the fiscal years 1978 and 1979 to carry out this section.

"Labeling of Certain Oil

"Sec. 2005. For purposes of any provision of law which requires the labeling of commodities, lubricating oil shall be treated as lawfully labeled only if it bears the following statement, prominently displayed:

" 'DON'T POLLUTE—CONSERVE RESOURCES; RETURN USED OIL TO COLLECTION CENTERS'.

[2005 added by PL 96-463]

[Editor's note: See also Sec. 4(c) of PL 96-463 published at the end of this Act.]

"Annual Report

"Sec. 2006. The Administrator shall transmit to the Congress and the President, not later than ninety days after the end of each fiscal year, a comprehensive and detailed report on all activities of the Office during the preceding fiscal year. Each such report shall include—

"(1) a statement of specific and detail objectives for the activities and programs conducted and assisted under this Act;

"(2) statements of the Administrator's conclusions as to the effectiveness of such activities and programs in meeting the stated objectives and the purposes of this Act, measured through the end of such fiscal year;

"(3) a summary of outstanding solid waste problems confronting the Administrator, in order of priority;

"(4) recommendations with respect to such legislation which the Administrator deems necessary or desirable to assist in solving problems respecting solid waste;

"(5) all other information required to be submitted

to the Congress pursuant to any other provision of this Act; and

“(6) the Administrator’s plans for activities and programs respecting solid waste during the next fiscal year.
[2005 redesignated as 2006 by PL 96-463]

“General Authorization

“Sec. 2007. (a) General Administration.—There are authorized to be appropriated to the Administrator for the purpose of carrying out the provisions of this Act, \$35,000,000 for the fiscal year ending September 30, 1977, \$38,000,000 for the fiscal year ending September 30, 1978, \$42,000,000 for the fiscal year ending September 30, 1979, \$70,000,000 for the fiscal year ending September 30, 1980, \$80,000,000 for the fiscal year ending September 30, 1981, and \$80,000,000 for the fiscal year ending September 30, 1982.

“(b) Resource Recovery and Conservation Panels.—Not less than 20 percent of the amount appropriated under subsection (a), or \$5,000,000 per fiscal year, whichever is less, shall be used only for purposes of Resource Recovery and Conservation Panels established under section 2003 (including travel expenses incurred by such panels in carrying out their functions under this Act).

“(c) Hazardous Waste.—Not less than 30 percent of the amount appropriated under subsection (a) shall be used only for purposes of carrying out subtitle C of this Act (relating to hazardous waste) other than section 3011.

“(d) State and Local Support.—Not less than 25 percent of the total amount appropriated under this title, up to the amount authorized in section 4008(a)(1), shall be used only for purposes of support to State, regional, local, and interstate agencies in accordance with subtitle D of this Act other than section 4008(a)(2) or 4009.

[Editor’s note: PL 96-463 redesignated Section 2006 as 2007. However, PL 96-482 cites the former designation (2006) in amending this Section.]

“Subtitle C—Hazardous Waste Management

“Identification and Listing of Hazardous Waste

“Sec. 3001. (a) Criteria for Identification or Listing.—Not later than eighteen months after the date of the enactment of this Act, the Administrator shall, after notice and opportunity for public hearing, and after consultation with appropriate Federal and State agencies, develop and promulgate criteria for identifying the characteristics of hazardous waste, and for listing hazardous waste, which should be subject to the provisions of this subtitle, taking into account toxicity, persistence, and degradability in nature, potential for accumulation in tissue, and other related factors such as flammability, corrosiveness, and other hazardous

characteristics. Such criteria shall be revised from time to time as may be appropriate.

“(b)(1) Identification and Listing.—Not later than eighteen months after the date of enactment of this section, and after notice and opportunity for public hearing, the Administrator shall promulgate regulations identifying the characteristics of hazardous waste, and listing particular hazardous wastes (within the meaning of section 1004(5)), which shall be subject to the provisions of this subtitle. Such regulations shall be based on the criteria promulgated under subsection (a) and shall be revised from time to time thereafter as may be appropriate.

[3001(b)(1) designated by PL 96-482]

“(2)(A) Notwithstanding the provisions of paragraph (1) of this subsection, drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil or natural gas or geothermal energy shall be subject only to existing State or Federal regulatory programs in lieu of subtitle C until at least 24 months after the date of enactment of the Solid Waste Disposal Act Amendments of 1980 and after promulgation of the regulations in accordance with subparagraphs (B) and (C) of this paragraph. It is the sense of the Congress that such State or Federal programs should include, for waste disposal sites which are to be closed, provisions requiring at least the following:

“(i) The identification through surveying, platting, or other measures, together with recordation of such information on the public record, so as to assure that the location where such wastes are disposed of can be located in the future; except however, that no such surveying, platting, or other measure identifying the location of a disposal site for drilling fluids and associated wastes shall be required if the distance from the disposal site to the surveyed or platted location to the associated well is less than two hundred lineal feet; and

“(ii) A chemical and physical analysis of a produced water and a composition of a drilling fluid suspected to contain a hazardous material, with such information to be acquired prior to closure and to be placed on the public record.

“(B) Not later than six months after completion and submission of the study required by section 8002(m) of this Act, the Administrator shall, after public hearings and opportunity for comment, determine either to promulgate regulations under this subtitle for drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil or natural gas or geothermal energy or that such regulations are unwarranted. The Administrator shall publish his decision in the Federal Register accompanied by an explanation and justification of the reasons for it. In making the decision under this paragraph, the Administrator shall utilize the informa-

tion developed or accumulated pursuant to the study required under section 8002(m).

“(C) The Administrator shall transmit his decision, along with any regulations, if necessary, to both Houses of Congress. Such regulations shall take effect only when authorized by Act of Congress.

[3001(b)(2) added by PL 96-482]

“(3)(A) Notwithstanding the provisions of paragraph (1) of this subsection, each waste listed below shall, except as provided in subparagraph (B) of this paragraph, be subject only to regulation under other applicable provisions of Federal or State law in lieu of this subtitle until at least six months after the date of submission of the applicable study required to be conducted under subsection (f), (n), (o), or (p) of section 8002 of this Act and after promulgation of regulations in accordance with subparagraph (C) of this paragraph:

“(i) Fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels.

“(ii) Solid waste from the extraction, beneficiation, and processing of ores and minerals, including phosphate rock and overburden from the mining of uranium ore.

“(iii) Cement kiln dust waste.

“(B)(i) Owners and operators of disposal sites for wastes listed in subparagraph (A) may be required by the Administrator, through regulations prescribed under authority of section 2002 of this Act—

“(I) as to disposal sites for such wastes which are to be closed, to identify the locations of such sites through surveying, platting, or other measures, together with recordation of such information on the public record, to assure that the locations where such wastes are disposed of are known and can be located in the future, and

“(II) to provide chemical and physical analysis and composition of such wastes, based on available information, to be placed on the public record.

“(ii)(I) In conducting any study under subsection (f), (n), (o), or (p), of section 8002 of this Act, any officer, employee, or authorized representative of the Environmental Protection Agency, duly designated by the Administrator, is authorized, at reasonable times and as reasonably necessary for the purposes of such study, to enter any establishment where any waste subject to such study is generated, stored, treated, disposed of, or transported from; to inspect, take samples, and conduct monitoring and testing; and to have access to and copy records relating to such waste. Each such inspection shall be commenced and completed with reasonable promptness. If the officer, employee, or authorized representative obtains any samples prior to leaving the premises, he shall give to the owner, operator, or agent in charge a receipt describing the sample obtained and if requested a portion of each such sample equal in volume or weight to the portion retained. If any analysis is made of such samples, or monitoring and testing performed, a

copy of the results shall be furnished promptly to the owner, operator, or agent in charge.

“(II) Any records, reports, or information obtained from any person under subclause (I) shall be available to the public, except that upon a showing satisfactory to the Administrator by any person that records, reports, or information, or particular part thereof, to which the Administrator has access under this subparagraph if made public, would divulge information entitled to protection under section 1905 of title 18 of the United States Code, the Administrator shall consider such information or particular portion thereof confidential in accordance with the purposes of that section, except that such record, report, document, or information may be disclosed to other officers, employees, or authorized representatives of the United States concerned with carrying out this Act. Any person not subject to the provisions of section 1905 of title 18 of the United States Code who knowingly and willfully divulges or discloses any information entitled to protection under this subparagraph shall, upon conviction, be subject to a fine of not more than \$5,000 or to imprisonment not to exceed one year, or both.

“(iii) The Administrator may prescribe regulations, under the authority of this Act, to prevent radiation exposure which presents an unreasonable risk to human health from the use in construction or land reclamation (with or without revegetation) of (I) solid waste from the extraction, beneficiation, and processing of phosphate rock or (II) overburden from the mining of uranium ore.

“(iv) Whenever on the basis of any information the Administrator determines that any person is in violation of any requirement of this subparagraph, the Administrator shall give notice to the violator of his failure to comply with such requirement. If such violation extends beyond the thirtieth day after the Administrator's notification, the Administrator may issue an order requiring compliance within a specified time period or the Administrator may commence a civil action in the United States district court in the district in which the violation occurred for appropriate relief, including a temporary or permanent injunction.

“(C) Not later than six months after the date of submission of the applicable study required to be conducted under subsection (f), (n), (o), or (p), of section 8002 of this Act, the Administrator shall, after public hearings and opportunity for comment, either determine to promulgate regulations under this subtitle for each waste listed in subparagraph (A) of this paragraph or determine that such regulations are unwarranted. The Administrator shall publish his determination, which shall be based on information developed or accumulated pursuant to such study, public hearings, and comment, in the Federal Register accompanied by an explanation and justification of the reasons for it.

[3001(b)(3) added by PL 96-482]

"(c) Petition by State Governor.—At any time after the date eighteen months after the enactment of this title, the Governor of any State may petition the Administrator to identify or list a material as a hazardous waste. The Administrator shall act upon such petition within ninety days following his receipt thereof and shall notify the Governor of such action. If the Administrator denies such petition because of financial considerations, in providing such notice to the Governor he shall include a statement concerning such considerations.

"Standards Applicable to Generators of Hazardous Waste

"Sec. 3002. Not later than eighteen months after the date of the enactment of this section, and after notice and opportunity for public hearings and after consultation with appropriate Federal and State agencies, the Administrator shall promulgate regulations establishing such standards, applicable to generators of hazardous waste identified or listed under this subtitle, as may be necessary to protect human health and the environment. Such standards shall establish requirements respecting—

"(1) recordkeeping practices that accurately identify the quantities of such hazardous waste generated, the constituents thereof which are significant in quantity or in potential harm to human health or the environment, and the disposition of such wastes;

"(2) labeling practices for any containers used for the storage, transport, or disposal of such hazardous waste such as will identify accurately such waste;

"(3) use of appropriate containers for such hazardous waste;

"(4) furnishing of information on the general chemical composition of such hazardous waste to persons transporting, treating, storing, or disposing of such wastes;

"(5) use of a manifest system and any other reasonable means necessary to assure that all such hazardous waste generated is designated for treatment, storage, or disposal in, and arrives at treatment, storage, or disposal facilities (other than facilities on the premises where the waste is generated) for which a permit has been issued as provided in this subtitle, or pursuant to title I of the Marine Protection, Research, and Sanctuaries Act (86 Stat. 1052); and

"(6) submission of reports to the Administrator (or the State agency in any case in which such agency carries out an authorized permit program pursuant to this subtitle) at such times as the Administrator (or the State agency if appropriate) deems necessary, setting out—

"(A) the quantities of hazardous waste identified or listed under the subtitle that he has generated during a particular time period; and

"(B) the disposition of all hazardous waste reported under subparagraph (A).

"Standards Applicable to Transporters of Hazardous Waste

"Sec. 3003. (a) Standards.—Not later than eighteen months after the date of enactment of this section, and after opportunity for public hearings the Administrator, after consultation with the Secretary of Transportation and the States, shall promulgate regulations establishing such standards, applicable to transporters of hazardous waste identified or listed under this subtitle, as may be necessary to protect human health and the environment. Such standards shall include but need not be limited to requirements respecting—

"(1) recordkeeping concerning such hazardous waste transported, and their source and delivery points;

"(2) transportation of such waste only if properly labeled;

"(3) compliance with the manifest system referred to in section 3002(5); and

"(4) transportation of all such hazardous waste only to the hazardous waste treatment, storage, or disposal facilities which the shipper designates on the manifest form to be a facility holding a permit issued under this subtitle, or pursuant to title I of the Marine Protection, Research, and Sanctuaries act (86 Stat. 1052).

"(b) Coordination With Regulations of Secretary of Transportation.—In case of any hazardous waste identified or listed under this subtitle which is subject to the Hazardous Materials Transportation Act (88 Stat. 2156; 49 U.S.C. 1801 and following), the regulations promulgated by the Administrator under this section shall be consistent with the requirements of such Act and the regulations thereunder. The Administrator is authorized to make recommendations to the Secretary of Transportation respecting the regulations of such hazardous waste under the Hazardous Materials Transportation Act and for addition of materials to be covered by such Act.

"Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

Sec. 3004. Not later than eighteen months after the date of enactment of this section, and after opportunity for public hearings and after consultation with appropriate Federal and State agencies, the Administrator shall promulgate regulations establishing such performance standards, applicable to owners and operators of facilities for the treatment, storage, or disposal of hazardous waste identified or listed under this subtitle, as may be necessary to protect human health and the environment. In establishing such standards the Administrator shall, where appropriate, distinguish in such standards between requirements appropriate for new facilities and for facilities in existence on the date of promulgation of such regulations. Such standards shall include, but need not be limited to, requirements respecting—

[3004 amended by PL 96-482]

"(1) maintaining records of all hazardous wastes identified or listed under this title which is treated, stored, or disposed of, as the case may be, and the manner in which such wastes were treated, stored, or disposed of;

"(2) satisfactory reporting, monitoring, and inspection and compliance with the manifest system referred to in section 3002(5);

"(3) treatment, storage, or disposal of all such waste received by the facility pursuant to such operating methods, techniques, and practices as may be satisfactory to the Administrator;

"(4) the location, design, and construction of such hazardous waste treatment, disposal, or storage facilities;

"(5) contingency plans for effective action to minimize unanticipated damage from any treatment, storage, or disposal of any such hazardous waste;

"(6) the maintenance of operation of such facilities and requiring such additional qualifications as to ownership, continuity of operation, training for personnel, and financial responsibility as may be necessary or desirable; and

"(7) compliance with the requirements of section 3005 respecting permits for treatment, storage, or disposal.

No private entity shall be precluded by reason of criteria established under paragraph (6) from the ownership or operation of facilities providing hazardous waste treatment, storage, or disposal services where such entity can provide assurances of financial responsibility and continuity of operation consistent with the degree and duration of risks associated with the treatment, storage, or disposal of specified hazardous waste.

"Permits for Treatment, Storage, or Disposal of Hazardous Waste

"Sec. 3005. (a) Permit Requirements.—Not later than eighteen months after the date of the enactment of this section, the Administrator shall promulgate regulations requiring each person owning or operating a facility for the treatment, storage, or disposal of hazardous waste identified or listed under this subtitle to have a permit issued pursuant to this section. Such regulations shall take effect on the date provided in section 3010 and upon and after such date the treatment, storage, or disposal of any such hazardous waste is prohibited except in accordance with such a permit.

"(b) Requirements of Permit Application.—Each application for a permit under this section shall contain such information as may be required under regulations promulgated by the Administrator, including information respecting—

"(1) estimates with respect to the composition, quantities, and concentrations of any hazardous waste identified or listed under this subtitle, or combinations of any such hazardous waste and any other solid waste, pro-

posed to be disposed of, treated, transported, or stored, and the time, frequency, or rate of which such waste is proposed to be disposed of, treated, transported, or stored; and

"(2) the site at which such hazardous waste or the products of treatment of such hazardous waste will be disposed of, treated, transported to, or stored.

"(c) Permit Issuance.—Upon a determination by the Administrator (or a State, if applicable), of compliance by a facility for which a permit is applied for under this section with the requirements of this section and section 3004, the Administrator (or the State) shall issue a permit for such facilities. In the event permit applicants propose modification of their facilities, or in the event the Administrator (or the State) determines that modifications are necessary to conform to the requirements under this section and section 3004, the permit shall specify the time allowed to complete the modifications.

"(d) Permit Revocation.—Upon a determination by the Administrator (or by a State, in the case of a State having an authorized hazardous waste program under section 3006) of noncompliance by a facility having a permit under this title with the requirements of this section or section 3004, the Administrator (or State, in the case of a State having an authorized hazardous waste program under section 3006) shall revoke such permit.

"(e) Interim Status.—Any person who—

"(1) owns or operates a facility required to have a permit under this section which facility is in existence on November 19, 1980,

[3005(e)(1) amended by PL 96-482]

"(2) has complied with the requirements of section 3010(a), and

"(3) has made an application for a permit under this section shall be treated as having been issued such permit until such time as final administrative disposition of such application is made, unless the Administrator or other plaintiff proves that final administrative disposition of such application has not been made because of the failure of the applicant to furnish information reasonably required or requested in order to process the application.

"(f) Coal Mining Wastes and Reclamation Permits.—Notwithstanding subsection (a) through (e) of this section, any surface coal mining and reclamation permit covering any coal mining wastes or overburden which has been issued or approved under the Surface Mining Control and Reclamation Act of 1977 shall be deemed to be a permit issued pursuant to this section with respect to the treatment, storage, or disposal of such wastes or overburden. Regulations promulgated by the Administrator under this subtitle shall not be applicable to treatment, storage, or disposal of coal mining wastes and overburden which are covered by such a permit.

[3005(f) added by PL 96-482]

"Authorized State Hazardous Waste Programs

"Sec. 3006. (a) Federal Guidelines.—Not later than eighteen months after the date of enactment of this Act, the Administrator, after consultation with State authorities, shall promulgate guidelines to assist States in the development of State hazardous waste programs.

"(b) Authorization of State Program.—Any State which seeks to administer and enforce a hazardous waste program pursuant to this subtitle may develop and, after notice and opportunity for public hearing, submit to the Administrator an application, in such form as he shall require, for authorization of such program. Within ninety days following submission of an application under this subsection, the Administrator shall issue a notice as to whether or not he expects such program to be authorized, and within ninety days following such notice (and after opportunity for public hearing) he shall publish his findings as to whether or not the conditions listed in items (1), (2), and (3) below have been met. Such State is authorized to carry out such program in lieu of the Federal program under this subtitle in such State and to issue and enforce permits for the storage, treatment, or disposal of hazardous waste unless, within ninety days following submission of the application the Administrator notifies such State that such program may not be authorized and, within ninety days following such notice and after opportunity for public hearing, he finds that (1) such State program is not equivalent to the Federal program under this subtitle, (2) such program is not consistent with the Federal or State programs applicable in other States, or (3) such program does not provide adequate enforcement of compliance with the requirements of this subtitle.

"(c) Interim Authorization.—Any State which has in existence a hazardous waste program pursuant to State law before the date ninety days after the date of promulgation of regulations under sections 3002, 3003, 3004, and 3005, may submit to the Administrator evidence of such existing program and may request a temporary authorization to carry out such program under this subtitle. The Administrator shall, if the evidence submitted shows the existing State program to be substantially equivalent to the Federal program under this subtitle, grant an interim authorization to the State to carry out such program in lieu of the Federal program pursuant to this subtitle for a twenty-four month period beginning on the date six months after the date of promulgation of regulations under sections 3002 through 3005.

"(d) Effect of State Permit.—Any action taken by a State under a hazardous waste program authorized under this section shall have the same force and effect as action taken by the Administrator under this subtitle.

"(e) Withdrawal of Authorization.—Whenever the Administrator determines after public hearing that a State is not administering and enforcing a program authorized under this section in accordance with requirements of this section, he shall so notify the State

and, if appropriate corrective action is not taken within a reasonable time, not to exceed ninety days, the Administrator shall withdraw authorization of such program and establish a Federal program pursuant to this subtitle. The Administrator shall not withdraw authorization of any such program unless he shall first have notified the State, and made public, in writing, the reasons for such withdrawal.

"Inspections

"Sec. 3007. (a) Access Entry.—For purposes of developing or assisting in the development of any regulation or enforcing the provisions of this title, any person who generates, stores, treats, transports, disposes of, or otherwise handles or has handled hazardous wastes shall, upon request of any officer, employee or representative of the Environmental Protection Agency, duly designated by the Administrator, or upon request of any duly designated officer, employee or representative of a State having an authorized hazardous waste program, furnish information relating to such wastes and permit such person at all reasonable times to have access to, and to copy all records relating to such wastes. For the purposes of developing or assisting in the development of any regulation or enforcing the provisions of this title, such officers, employees or representatives are authorized—

"(1) to enter at reasonable times any establishment or other place where hazardous wastes are or have been generated, stored, treated, disposed of, or transported from;

"(2) to inspect and obtain samples from any person of any such wastes and samples of any containers or labeling for such wastes.

Each such inspection shall be commenced and completed with reasonable promptness. If the officer, employee or representative obtains any samples, prior to leaving the premises, he shall give to the owner, operator, or agent in charge a receipt describing the sample obtained and if requested a portion of each such sample equal in volume or weight to the portion retained. If any analysis is made of such samples, a copy of the results of such analysis shall be furnished promptly to the owner, operator, or agent in charge.

[3007(a) amended by PL 96-482]

"(b) Availability to Public.— (1) Any records, reports, or information obtained from any person under this section shall be available to the public, except that upon a showing satisfactory to the Administrator (or the State, as the case may be) by any person that records, reports, or information, or particular part thereof, to which the Administrator (or the State, as the case may be) or any officer, employee or representative thereof has access under this section if made public, would divulge information entitled to protection under section 1905 of title 18 of the United States Code, such information or particular portion thereof shall be considered

confidential in accordance with the purposes of that section, except that such record, report, document, or information may be disclosed to other officers, employees, or authorized representatives of the United State concerned with carrying out this Act, or when relevant in any proceeding under this Act.

"(2) Any person not subject to the provisions of section 1905 of title 18 of the United States Code who knowingly and willfully divulges or discloses any information entitled to protection under this subsection shall, upon conviction, be subject to a fine of not more than \$5,000 or to imprisonment not to exceed one year, or both.

"(3) In submitting data under this Act, a person required to provide such data may—

"(A) designate the data which such person believes is entitled to protection under this subsection, and

"(B) submit such designated data separately from other data submitted under this Act.

A designation under this paragraph shall be made in writing and in such manner as the Administrator may prescribe.

"(4) Notwithstanding any limitation contained in this section or any other provision of law, all information reported to, or otherwise obtained by, the Administrator (or any representative of the Administrator) under this Act shall be made available, upon written request of any duly authorized committee of the Congress, to such committee (including records, reports, or information obtained by representatives of the Environmental Protection Agency).

"Federal Enforcement

"Sec. 3008. (a) Compliance Orders.—(1) Except as provided in paragraph (2), whenever on the basis of any information the Administrator determines that any person is in violation of any requirement of this subtitle, the Administrator may issue an order requiring compliance immediately or within a specified time period or the Administrator may commence a civil action in the United States district court in the district in which the violation occurred for appropriate relief, including a temporary or permanent injunction.

[3008(a)(1) amended by PL 96-482]

"(2) In the case of a violation of any requirement of this subtitle where such violation occurs in a State which is authorized to carry out a hazardous waste program under section 3006, the Administrator shall give notice to the State in which such violation has occurred prior to issuing an order or commencing a civil action under this section.

[3008(a)(2) amended by PL 96-482]

"(3) If such violator fails to take corrective action within the time specified in the order, he shall be liable for a civil penalty of not more than \$25,000 for each day of continued noncompliance and the Administrator may suspend or revoke any permit issued to the violator

(whether issued by the Administrator or the State).

"(b) Public Hearing.—Any order shall become final unless, no later than thirty days after the order is served, the person or persons named therein request a public hearing. Upon such request the Administrator shall promptly conduct a public hearing. In connection with any proceeding under this section the Administrator may issue subpoenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents, and may promulgate rules for discovery procedures.

[3008(b) amended by PL 96-482]

"(c) Requirements of Compliance Orders.—Any order issued under this section may include a suspension or revocation of a permit issued under this subtitle, and shall state with reasonable specificity the nature of the violation and specify a time for compliance and assess a penalty, if any, which the Administrator determines is reasonable taking into account the seriousness of the violation and any good faith efforts to comply with the applicable requirements.

[3008(c) amended by PL 96-482]

"(d) Criminal Penalties.—Any person who—

"(1) knowingly transports any hazardous waste identified or listed under this subtitle to a facility which does not have a permit under section 3005 (or 3006 in case of a State program), or pursuant to title I of the Marine Protection, Research, and Sanctuaries Act (86 Stat. 1052),

"(2) knowingly treats, stores, or disposes of any hazardous waste identified or listed under this subtitle either—

"(A) without having obtained a permit under section 3005 (or 3006 in the case of a State program) or pursuant to title I of the Marine Protection, Research, and Sanctuaries Act (86 Stat. 1052); or

"(B) in knowing violation of any material condition or requirement of such permit;

"(3) knowingly makes any false material statement or representation in any application, label, manifest, record, report, permit or other document filed, maintained, or used for purposes of compliance with this subtitle; or

"(4) knowingly generates, stores, treats, transports, disposes of, or otherwise handles any hazardous waste (whether such activity took place before or takes place after the date of the enactment of this paragraph) and who knowingly destroys, alters, or conceals any record required to be maintained under regulations promulgated by the Administrator under this subtitle shall, upon conviction, be subject to a fine of not more than \$25,000 (\$50,000 in the case of a violation of paragraph (1) or (2)) for each day of violation, or to imprisonment not to exceed one year (two years in the case of a violation of paragraph (1) or (2)), or both. If the conviction is for a violation committed after a first conviction of such person under this paragraph, punish-

ment shall be by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two years, or by both.

[3008(d) revised and (e) through (g) added by PL 96-482]

"(e) Knowing Endangerment.—Any person who knowingly transports, treats, stores, or disposes of any hazardous waste identified or listed under this subtitle—

"(1)(A) in violation of paragraphs (1) or (2) of subsection (d) of this section, or

"(B) having applied for a permit under section 3005 or 3006, and knowingly either—

"(i) has failed to include in his application material information required under regulations promulgated by the Administrator, or

"(ii) fails to comply with the applicable interim status regulations and standards promulgated pursuant to this subtitle,

who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, and

"(2)(A) if his conduct in the circumstances manifests an unjustified and inexcusable disregard for human life, or

"(B) if his conduct in the circumstances manifests an extreme indifference for human life.

shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment for not more than 2 years, or both, except that any person who violates subsection (e)(2)(B) shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment for not more than 5 years, or both. A defendant that is an organization shall, upon conviction of violating this subsection, be subject to a fine of not more than \$1,000,000.

"(f) Special Rules.—For the purposes of subsection (e)—

"(1) A person's state of mind is knowing with respect to—

"(A) his conduct, if he is aware of the nature of his conduct;

"(B) an existing circumstance, if he is aware or believes that the circumstance exists; or

"(C) a result of his conduct, if he is aware or believes that his conduct is substantially certain to cause danger of death or serious bodily injury.

"(2) In determining whether a defendant who is a natural person knew that his conduct placed another person in imminent danger of death or serious bodily injury—

"(A) the person is responsible only for actual awareness or actual belief that he possessed; and

"(B) knowledge possessed by a person other than the defendant but not by the defendant himself may not be attributed to the defendant;

Provided, That in proving the defendant's possession of actual knowledge, circumstantial evidence may be

used, including evidence that the defendant took affirmative steps to shield himself from relevant information.

"(3) It is an affirmative defense to a prosecution that the conduct charged was consented to by the person endangered and that the danger and conduct charged were reasonably foreseeable hazards of—

"(A) an occupation, a business, or a profession; or

"(B) medical treatment or medical or scientific experimentation conducted by professionally approved methods and such other person had been made aware of the risks involved prior to giving consent.

The defendant may establish an affirmative defense under this subsection by a preponderance of the evidence.

"(4) All general defenses, affirmative defenses, and bars to prosecution that may apply with respect to other Federal criminal offenses may apply under subsection (e) and shall be determined by the courts of the United States according to the principles of common law as they may be interpreted in the light of reason and experience. Concepts of justification and excuse applicable under this section may be developed in the light of reason and experience.

"(5) The term 'organization' means a legal entity, other than a government, established or organized for any purpose, and such term includes a corporation, company, association, firm, partnership, joint stock company, foundation, institution, trust, society, union, or any other association of persons.

"(6) The term 'serious bodily injury' means—

"(A) bodily injury which involves a substantial risk of death;

"(B) unconsciousness;

"(C) extreme physical pain;

"(D) protracted and obvious disfigurement; or

"(E) protracted loss or impairment of the function of a bodily member, organ, or mental faculty.

"(g) Civil Penalty.—Any person who violates any requirement of this subtitle shall be liable to the United States for a civil penalty in an amount not to exceed \$25,000 for each such violation. Each day of such violation shall, for purposes of this subsection, constitute a separate violation.

"Retention of State Authority

"Sec. 3009. Upon the effective date of regulations under this subtitle no State or political subdivision may impose any requirements less stringent than those authorized under this subtitle respecting the same matter as governed by such regulations, except that if application of a regulation with respect to any matter under this subtitle is postponed or enjoined by the action of any court, no State or political subdivision shall be prohibited from acting with respect to the same aspect of such matter until such time as such regulation takes effect. Nothing in this title shall be construed to

prohibit any State or political subdivision thereof from imposing any requirements, including those for site selection, which are more stringent than those imposed by such regulations.

[3009 amended by PL 96-482]

"Effective Date

"Sec. 3010. (a) Preliminary Notification.—Not later than ninety days after promulgation of regulations under section 3001 identifying by its characteristics or listing any substance as hazardous waste subject to this subtitle, any person generating or transporting such substance or owning or operating a facility for treatment, storage, or disposal of such substance shall file with the Administrator (or with States having authorized hazardous waste permit programs under section 3006) a notification stating the location and general description of such activity and the identified or listed hazardous wastes handled by such person. In revising any regulation under section 3001 identifying additional characteristics of hazardous waste or listing any additional substance as hazardous waste subject to this subtitle, the Administrator may require any person referred to in the preceding sentence to file with the Administrator (or with States having authorized hazardous waste permit programs under section 3006) the notification described in the preceding sentence. Not more than one such notification shall be required to be filed with respect to the same substance. No identified or listed hazardous waste subject to this subtitle may be transported, treated, stored, or disposed of unless notification has been given as required under this subsection.

[3010(a) amended by PL 96-482]

"(o) Effective Date of Regulation.—The regulations under this subtitle respecting requirements applicable to the generation, transportation, treatment, storage, or disposal of hazardous waste (including requirements respecting permits for such treatment, storage, or disposal) shall take effect on the date six months after the date of promulgation thereof (or six months after the date of revision in the case of any regulation which is revised after the date required for promulgation thereof).

"Authorization of Assistance to States

Sec. 3011. (a) Authorization.—There is authorized to be appropriated \$25,000,000 for each of the fiscal years 1978 and 1979, \$20,000,000 for fiscal year 1980, \$35,000,000 for fiscal year 1981, and \$40,000,000 for fiscal year 1982 to be used to make grants to the States for purposes of assisting the States in the development and implementation of authorized State hazardous waste programs.

[3011(a) amended by PL 96-482]

"(b) Allocation.—Amounts authorized to be appropriated under subsection (a) shall be allocated among

the States on the basis of regulations promulgated by the Administrator, after consultation with the States, which take into account, the extent to which hazardous waste is generated, transported, treated, stored, and disposed of within such State, the extent of exposure of human beings and the environment within such State to such waste, and such other factors as the Administrator deems appropriate.

"(c) Activities Included.—State hazardous waste programs for which grants may be made under subsection (a) may include (but shall not be limited to) planning for hazardous waste treatment, storage and disposal facilities, and the development and execution of programs to protect health and the environment from inactive facilities which may contain hazardous waste.

[3011(c) added by PL 96-482]

[Editor's note: Public Laws 96-463 and 96-482 both amended Subtitle C of this Act and add a new Section 3012. The text of each version follows:]

"Restrictions on Recycled Oil

"Sec. 3012. Not later than one year after the date of the enactment of this section, the Administrator shall promulgate regulations establishing such performance standards and other requirements as may be necessary to protect the public health and the environment from hazards associated with recycled oil. In developing such regulations, the Administrator shall conduct an analysis of the economic impact of the regulations on the oil recycling industry. The Administrator shall ensure that such regulations do not discourage the recovery or recycling of used oil.

[3012 added by PL 96-463]

"Hazardous Waste Site Inventory

"Sec. 3012. (a) State Inventory Programs.—Each State shall, as expeditiously as practicable, undertake a continuing program to compile, publish, and submit to the Administrator an inventory describing the location of each site within such State at which hazardous waste has at any time been stored or disposed of. Such inventory shall contain—

"(1) a description of the location of the sites at which any such storage or disposal has taken place before the date on which permits are required under section 3005 for such storage or disposal;

"(2) such information relating to the amount, nature, and toxicity of the hazardous waste at each such site as may be practicable to obtain and as may be necessary to determine the extent of any health hazard which may be associated with such site;

"(3) the name and address, or corporate headquarters of, the owner of each such site, determined as of the date of preparation of the inventory;

"(4) an identification of the types or techniques of waste treatment or disposal which have been used at each such site; and

"(5) information concerning the current status of the site, including information respecting whether or not hazardous waste is currently being treated or disposed of at such site (and if not, the date on which such activity ceased) and information respecting the nature of any other activity currently carried out at such site. For purposes of assisting the States in compiling information under this section, the Administrator shall make available to each State undertaking a program under this section such information as is available to him concerning the items specified in paragraphs (1) through (5) with respect to the sites within such State, including such information as the Administrator is able to obtain from other agencies or departments of the United States and from surveys and studies carried out by any committee or subcommittee of the Congress. Any State may exercise the authority of section 3007 for purposes of this section in the same manner and to the same extent as provided in such section in the case of States having an authorized hazardous waste program, and any State may by order require any person to submit such information as may be necessary to compile the data referred to in paragraphs (1) through (5).

"(b) Environmental Protection Agency Program.—If the Administrator determines that any State program under subsection (a) is not adequately providing information respecting the sites in such State referred to in subsection (a), the Administrator shall notify the State. If within ninety days following such notification, the State program has not been revised or amended in such manner as will adequately provide such information, the Administrator shall carry out the inventory program in such State. In any such case—

"(1) the Administrator shall have the authorities provided with respect to State programs under subsection (a);

"(2) the funds allocated under subsection (c) for grants to States under this section may be used by the Administrator for carrying out such program in such State; and

"(3) no further expenditure may be made for grants to such State under this section until such time as the Administrator determines that such State is carrying out, or will carry out, an inventory program which meets the requirements of this section.

"(c) Grants.—(1) Upon receipt of an application submitted by any State to carry out a program under this section, the Administrator may make grants to the States for purposes of carrying out such a program. Grants under this section shall be allocated among the several States by the Administrator based upon such regulations as he prescribes to carry out the purposes of this section. The Administrator may make grants to any State which has conducted an inventory program which effectively carried out the purposes of this section before the date of the enactment of the Solid Waste Disposal Act Amendments of 1980 to reimburse such State

for all, or any portion of, the costs incurred by such State in conducting such program.

"(2) There are authorized to be appropriated to carry out this section \$20,000,000.

"(d) No Impediment to Immediate Remedial Action.—Nothing in this section shall be construed to provide that the Administrator or any State should, pending completion of the inventory required under this section, postpone undertaking any enforcement or remedial action with respect to any site at which hazardous waste has been treated, stored, or disposed of.

[3012 added by PL 96-482]

"Monitoring, Analysis, and Testing

"Sec. 3013. (a) Authority of Administrators.—If the Administrator determines, upon receipt of any information, that—

"(1) the presence of any hazardous waste at a facility or site at which hazardous waste is, or has been, stored, treated, or disposed of, or

"(2) the release of any such waste from such facility or site may present a substantial hazard to human health or the environment, he may issue an order requiring the owner or operator of such facility or site to conduct such monitoring, testing, analysis, and reporting with respect to such facility or site as the Administrator deems reasonable to ascertain the nature and extent of such hazard.

"(b) Previous Owners and Operators.—In the case of any facility or site not in operation at the time a determination is made under subsection (a) with respect to the facility or site, if the Administrator finds that the owner of such facility or site could not reasonably be expected to have actual knowledge of the presence of hazardous waste at such facility or site and of its potential for release, he may issue an order requiring the most recent previous owner or operator of such facility or site who could reasonably be expected to have such actual knowledge to carry out the actions referred to in subsection (a).

"(c) Proposal.—An order under subsection (a) or (b) shall require the person to whom such order is issued to submit to the Administrator within 30 days from the issuance of such order a proposal for carrying out the required monitoring, testing, analysis, and reporting. The Administrator may, after providing such person with an opportunity to confer with the Administrator respecting such proposal, require such person to carry out such monitoring, testing, analysis, and reporting in accordance with such proposal, and such modifications in such proposal as the Administrator deems reasonable to ascertain the nature and extent of the hazard.

"(d) Monitoring, Etc., Carried Out by Administrator.—(1) If the Administrator determines that no owner or operator referred to in subsection (a) or (b) is able to conduct monitoring, testing, analysis, or reporting satisfactory to the Administrator, if the Administrator

deems any such action carried out by an owner or operator to be unsatisfactory, or if the Administrator cannot initially determine that there is an owner or operator referred to in subsection (a) or (b) who is able to conduct such monitoring, testing, analysis, or reporting, he may—

“(A) conduct monitoring, testing, or analysis (or any combination thereof) which he deems reasonable to ascertain the nature and extent of the hazard associated with the site concerned, or

“(B) authorize a State or local authority or other person to carry out any such action, and require, by order, the owner or operator referred to in subsection (a) or (b) to reimburse the Administrator or other authority or person for the costs of such activity.

“(2) No order may be issued under this subsection requiring reimbursement of the costs of any action carried out by the Administrator which confirms the results of an order issued under subsection (a) or (b).

“(3) For purposes of carrying out this subsection, the Administrator or any authority or other person authorized under paragraph (1), may exercise the authorities set forth in section 3007.

“(e) Enforcement.—The Administrator may commence a civil action against any person who fails or refuses to comply with any order issued under this section. Such action shall be brought in the United States district court in which the defendant is located, resides, or is doing business. Such court shall have jurisdiction to require compliance with such order and to assess a civil penalty of not to exceed \$5,000 for each day during which such failure or refusal occurs.

[3013 added by PL 96-482]

“Subtitle D—State or Regional Solid Waste Plans

“Objectives of Subtitle

“Sec. 4001. The objectives of this subtitle are to assist in developing and encouraging methods for the disposal of solid waste which are environmentally sound and which maximize the utilization of valuable resources including energy and materials which are recoverable from solid waste and to encourage resource conservation. Such objectives are to be accomplished through Federal technical and financial assistance to States or regional authorities for comprehensive planning pursuant to Federal guidelines designed to foster cooperation among Federal, State, and local governments and private industry.

[4001 amended by PL 96-482]

“Federal Guidelines for Plans

“Sec. 4002. (a) Guidelines for Identification of Regions.—For purposes of encouraging and facilitating the development of regional planning for solid waste management, the Administrator, within one hundred

and eighty days after the date of enactment of this section and after consultation with appropriate Federal, State, and local authorities, shall by regulation publish guidelines for the identification of those areas which have common solid waste management problems and are appropriate units for planning regional solid waste management services. Such guidelines shall consider—

“(1) the size and location of areas which should be included,

“(2) the volume of solid waste which should be included, and

“(3) the available means of coordinating regional planning with other related regional planning and for coordination of such regional planning into the State plan.

“(b) Guidelines for State Plans.—Not later than eighteen months after the date of enactment of this section and after notice and hearing, the Administrator shall, after consultation with appropriate Federal, State, and local authorities, promulgate regulations containing guidelines to assist in the development and implementation of State solid waste management plans (hereinafter in this title referred to as “State plans”). The guidelines shall contain methods for achieving the objectives specified in section 4001. Such guidelines shall be reviewed from time to time, but not less frequently than every three years, and revised as may be appropriate.

“(c) Considerations for State Plan Guidelines.—The guidelines promulgated under subsection (b) shall consider—

“(1) the varying regional, geologic, hydrologic, climatic, and other circumstances under which different solid waste practices are required in order to insure the reasonable protection of the quality of the ground and surface waters from leachate contamination, the reasonable protection of the quality of the surface waters from surface runoff contamination, and the reasonable protection of ambient air quality;

“(2) characteristics and conditions of collection, storage, processing, and disposal operating methods, techniques and practices, and location of facilities where such operating methods, techniques, and practices are conducted, taking into account the nature of the material to be disposed;

“(3) methods for closing or upgrading open dumps for purposes of eliminating potential health hazards;

“(4) population density, distribution, and projected growth;

“(5) geographic, geologic, climatic, and hydrologic characteristics;

“(6) the type and location of transportation;

“(7) the profile of industries;

“(8) the constituents and generation rates of waste;

“(9) the political, economic, organizational, financial, and management problems affecting comprehensive solid waste management;

"(10) types of resource recovery facilities and resource conservation systems which are appropriate; and

"(11) available new and additional markets for recovered material and energy and energy resources recovered from solid waste as well as methods for conserving such materials and energy.

[4002(c)(11) amended by PL 96-482]

"Requirements for Approval of Plans

[Amended by PL 96-463]

"Sec. 4003. (a) Minimum Requirements.—In order to be approved under section 4007, each State plan must comply with the following minimum requirements—

[Editor's note: PL 96-463 and PL 96-482 both designated 4003(a) and added identical amendments.]

"(1) The plan shall identify (in accordance with section 4006(b)) (A) the responsibilities of State, local, and regional authorities in the implementation of the State plan, (B) the distribution of Federal funds to the authorities responsible for development and implementation of the State plan, and (C) the means for coordinating regional planning and implementation under the State plan.

"(2) The plan shall, in accordance with section 4004(b) and 4005(a), prohibit the establishment of new open dumps within the State, and contain requirements that all solid waste (including solid waste originating in other States, but not including hazardous waste) shall be (A) utilized for resource recovery or (B) disposed of in sanitary landfills (within the meaning of section 4004(a)) or otherwise disposed of in an environmentally sound manner.

[4003(a)(2) amended by PL 96-482]

"(3) The plan shall provide for the closing or up-grading of all existing open dumps within the State pursuant to the requirements of section 4005.

"(4) The plan shall provide for the establishment of such State regulatory powers as may be necessary to implement the plan.

"(5) The plan shall provide that no state or local government within the State shall be prohibited under State or local law from negotiating and entering into long-term contracts for the supply of solid waste to resource recovery facilities, from entering into long-term contracts for the operation of such facilities, or from securing long-term markets for material and energy recovered from such facilities or for conserving materials or energy by reducing the volume of waste.

[4003(5) amended by PL 96-482]

"(6) The plan shall provide for such resource conservation or recovery and for the disposal of solid waste in sanitary landfills or any combination of practices so as may be necessary to use or dispose of such waste in a manner that is environmentally sound.

[Editor's note: PL 96-463 and PL 96-482 both added

a subsection (b) to Section 4003 of this Act. The text of each follows:]

"(b) Discretionary Plan Provisions Relating to Recycled Oil.—Any State plan submitted under this subtitle may include, at the option of the State, provisions to carry out each of the following:

"(1) Encouragement, to the maximum extent feasible and consistent with the protection of the public health and the environment, of the use of recycled oil in all appropriate areas of State and local government.

"(2) Encouragement of persons contracting with the State to use recycled oil to the maximum extent feasible, consistent with protection of the public health and the environment.

"(3) Informing the public of the uses of recycled oil.

"(4) Establishment and implementation of a program (including any necessary licensing of persons and including the use, where appropriate, of manifests) to assure that used oil is collected, transported, treated, stored, reused, and disposed of, in a manner which does not present a hazard to the public health or the environment.

Any plan submitted under this title before the date of the enactment of the Used Oil Recycling Act of 1980 may be amended, at the option of the State, at any time after such date to include any provision referred to in this subsection.

[4003(b) added by PL 96-463]

"(b) Energy and Materials Conservation and Recovery Feasibility Planning and Assistance.—(1) A State which has a plan approved under this subtitle or which has submitted a plan for such approval shall be eligible for assistance under section 4003(a)(3) if the Administrator determines that under such plan the State will—

"(A) analyze and determine the economic and technical feasibility of facilities and programs to conserve resources which contribute to the waste stream or to recover energy and materials from municipal waste;

"(B) analyze the legal, institutional, and economic impediments to the development of systems and facilities for conservation of energy or materials which contribute to the waste stream or for the recovery of energy and materials from municipal waste and make recommendations to appropriate governmental authorities for overcoming such impediments;

"(C) assist municipalities within the State in developing plans, programs, and projects to conserve resources or recover energy and materials from municipal waste; and

"(D) coordinate the resource conservation and recovery planning under subparagraph (C).

"(2) The analysis referred to in paragraph (1)(A) shall include—

"(A) the evaluation of, and establishment of priorities among, market opportunities for industrial and commercial users of all types (including public utilities

and industrial parks) to utilize energy and materials recovered from municipal waste;

"(B) comparisons of the relative costs of energy recovered from municipal waste in relation to the costs of energy derived from fossil fuels and other sources;

"(C) studies of the transportation and storage problems and other problems associated with the development of energy and materials recovery technology, including curbside source separation;

"(D) the evaluation and establishment of priorities among ways of conserving energy or materials which contribute to the waste stream;

"(E) comparison of the relative total costs between conserving resources and disposing of or recovering such waste; and

"(F) studies of impediments to resource conservation or recovery, including business practices, transportation requirements, or storage difficulties.

Such studies and analyses shall also include studies of other sources of solid waste from which energy and materials may be recovered or minimized.

[4003(b) added by PL 96-482]

"Criteria for Sanitary Landfills: Sanitary Landfills Required for All Disposal

"Sec. 4004. (a) **Criteria for Sanitary Landfills.**—Not later than one year after the date of enactment of this section, after consultation with the States, and after notice and public hearings, the Administrator shall promulgate regulations containing criteria for determining which facilities shall be classified as sanitary landfills and which shall be classified as open dumps within the meaning of this Act. At a minimum, such criteria shall provide that a facility may be classified as a sanitary landfill and not an open dump only if there is no reasonable probability of adverse effects on health or the environment from disposal of solid waste at such facility. Such regulations may provide for the classification of the types of sanitary landfills.

"(b) **Disposal Required to be in Sanitary Landfills, Etc.**—For purposes of complying with section 4003(2) each State plan shall prohibit the establishment of open dumps and contain a requirement that disposal of all solid waste within the State shall be in compliance with such section 4003(2).

"(c) **Effective Date.**—The prohibition contained in subsection (b) shall take effect on the date six months after the date of promulgation of regulations under subsection (a) or on the date of approval of the State plan, whichever is later.

"Upgrading of Open Dumps

"Sec. 4005. (a) **Closing or Upgrading of Existing Open Dumps.**—Upon promulgation of criteria under section 1008(a)(3), any solid waste management practice or disposal of solid waste or hazardous waste which constitutes the open dumping of solid waste or hazard-

ous waste is prohibited, except in the case of any practice or disposal of solid waste under a timetable or schedule for compliance established under this section. For purposes of complying with section 4003(2) and 4003(3), each State plan shall contain a requirement that all existing disposal facilities or sites for solid waste in such State which are open dumps listed in the inventory under subsection (b) shall comply with such measures as may be promulgated by the Administrator to eliminate health hazards and minimize potential health hazards. Each such plan shall establish, for any entity which demonstrates that it has considered other public or private alternatives for solid waste management to comply with the prohibition on open dumping and is unable to utilize such alternatives to so comply, a timetable or schedule for compliance for such practice or disposal of solid waste which specifies a schedule of remedial measures, including an enforceable sequence of actions or operations, leading to compliance with the prohibition on open dumping of solid waste within a reasonable time (not to exceed 5 years from the date of publication of criteria under section 1008(a)(3)).

[4005(c) redesignated as (a) and amended by PL 96-482]

"(b) **Inventory.**—To assist the States in complying with section 4003(3), not later than one year after promulgation of regulations under section 4004, the Administrator, with the cooperation of the Bureau of the Census shall publish an inventory of all disposal facilities or sites in the United States which are open dumps within the meaning of this Act.

[4005(b) amended by PL 96-482]

"Procedure for Development and Implementation of State Plan

Sec. 4006. (a) **Identification of Regions.**—Within one hundred and eighty days after publication of guidelines under section 4002(a) (relating to identification of regions), the Governor of each State, after consultation with local elected officials, shall promulgate regulations based on such guidelines identifying the boundaries of each area within the State which, as a result of urban concentrations, geographic conditions, markets, and other factors, is appropriate for carrying out regional solid waste management. Such regulations may be modified from time to time (identifying additional or different regions) pursuant to such guidelines.

"(b) **Identification of State and Local Agencies and Responsibilities.**—(1) Within one hundred and eighty days after the Governor promulgates regulations under subsection (a), for purposes of facilitating the development and implementation of a State plan which will meet the minimum requirements of section 4003, the State, together with appropriate elected officials of general purpose units of local government, shall jointly (A) identify an agency to develop the State plan and identify one or more agencies to implement such plan, and (B) identify which solid waste management ac-

tivities will, under such State plan, be planned for and carried out by the State and which such management activities will, under such State plan, be planned for and carried out by a regional or local authority or a combination of regional or local and State authorities. If a multi-functional regional agency authorized by State law to conduct solid waste planning and management (the members of which are appointed by the Governor) is in existence on the date of enactment of this Act, the Governor shall identify such authority for purposes of carrying out within such region clause (A) of this paragraph. Where feasible, designation of the agency for the affected area designated under section 208 of the Federal Water Pollution Control Act (86 Stat. 839) shall be considered. A State agency identified under this paragraph shall be established or designated by the Governor of such State. Local or regional agencies identified under this paragraph shall be composed of individuals at least a majority of whom are elected local officials.

[4006(b)(1)(B) amended by PL 96-482]

"(2) If planning and implementation agencies are not identified and designated or established as required under paragraph (1) for any affected area, the governor shall, before the date two hundred and seventy days after promulgation of regulations under subsection (a), establish or designate a State agency to develop and implement the State plan for such area.

"(c) Interstate Regions.—(1) In the case of any region which, pursuant to the guidelines published by the Administrator under section 4002(a) (relating to identification of regions), would be located in two or more States, the Governors of the respective States, after consultation with local elected officials, shall consult, cooperate, and enter into agreements identifying the boundaries of such region pursuant to subsection (a).

"(2) Within one hundred and eighty days after an interstate region is identified by agreement under paragraph (1), appropriate elected officials of general purpose units of local government within such region shall jointly establish or designate an agency to develop a plan for such region. If no such agency is established or designated within such period by such officials, the Governors of the respective States may, by agreement, establish or designate for such purpose a single representative organization including elected officials of general purpose units of local government within such region.

"(3) Implementation of interstate regional solid waste management plans shall be conducted by units of local government for any portion of a region within their jurisdiction, or by multijurisdictional agencies or authorities designated in accordance with State law, including those designated by agreement by such units of local government for such purpose. If no such unit, agency, or authority is so designated, the respective

Governors shall designate or establish a single interstate agency to implement such plan:

"(4) For purposes of this subtitle, so much of an interstate regional plan as is carried out within a particular State shall be deemed part of the State plan for such State.

"Approval of State Plan; Federal Assistance

"Sec. 4007. (a) Plan Approval.—The Administrator shall, within six months after a State plan has been submitted for approval, approve or disapprove the plan. The Administrator shall approve a plan if he determines that—

"(1) it meets the requirements of paragraphs (1), (2), (3), and (5) of section 4003; and

"(2) it contains provision for revision of such plan, after notice and public hearing, whenever the Administrator, by regulation, determines—

"(A) that revised regulations respecting minimum requirements have been promulgated under paragraphs (1), (2), (3), and (5) of section 4003 with which the State plan is not in compliance;

"(B) that information has become available which demonstrates the inadequacy of the plan to effectuate the purposes of this subtitle; or

"(C) that such revision is otherwise necessary.

The Administrator shall review approved plans from time to time and if he determines that revision or corrections are necessary to bring such plan into compliance with the minimum requirements promulgated under section 4003 (including new or revised requirements), he shall, after notice and opportunity for public hearing, withdraw his approval of such plan. Such withdrawal of approval shall cease to be effective upon the Administrator's determination that such complies with such minimum requirements.

"(b) Eligibility of States for Federal Financial Assistance.—(1) The Administrator shall approve a State application for financial assistance under this subtitle, and make grants to such State, if such State and local and regional authorities within such State have complied with the requirements of section 4006 within the period required under such section and if such State has a State plan which has been approved by the Administrator under this subtitle.

"(2) The Administrator shall approve a State application for financial assistance under this subtitle, and make grants to such State, for fiscal years 1978 and 1979 if the Administrator determines that the State plan continues to be eligible for approval under subsection (a) and is being implemented by the State.

"(3) Upon withdrawal of approval of a State plan under subsection (a), the Administrator shall withhold Federal financial and technical assistance under this subtitle (other than such technical assistance as may be necessary to assist in obtaining the reinstatement of ap-

proval) until such time as such approval is reinstated.

"(c) Existing Activities.—Nothing in this subtitle shall be construed to prevent or affect any activities respecting solid waste planning or management which are carried out by State, regional, or local authorities unless such activities are inconsistent with a State plan approved by the Administrator under this subtitle.

"Federal Assistance

"Sec. 4008. (a) Authorization of Federal Financial Assistance.—(1) There are authorized to be appropriated \$30,000,000 for fiscal year 1978, \$40,000,000 for fiscal year 1979, \$20,000,000 for fiscal year 1980, \$15,000,000 for fiscal year 1981, and \$20,000,000 for fiscal year 1982 for purposes of financial assistance to States and local, regional, and interstate authorities for the development and implementation of plans approved by the Administrator under this subtitle (other than the provisions of such plans referred to in section 4003(b), relating to feasibility planning for municipal waste energy and materials conservation and recovery).

[4008(a)(1) amended by PL 96-482]

"(2)(A) The Administrator is authorized to provide financial assistance to States, counties, municipalities, and intermunicipal agencies and State and local public solid waste management authorities for implementation of programs to provide solid waste management, resource recovery, and resource conservation services and hazardous waste management. Such assistance shall include assistance for facility planning and feasibility studies; expert consultation; surveys and analyses of market needs; marketing of recovered resources; technology assessments; legal expenses; construction feasibility studies; source separation projects; and fiscal or economic investigations or studies; but such assistance shall not include any other element of construction, or any acquisition of land or interest in land, or any subsidy for the price of recovered resources. Agencies assisted under this subsection shall consider existing solid waste management and hazardous waste management services and facilities as well as facilities proposed for construction.

"(B) An applicant for financial assistance under this paragraph must agree to comply with respect to the project or program assisted with the applicable requirements of section 4005 and Subtitle C of this Act and apply applicable solid waste management practices, methods, and levels of control consistent with any guidelines published pursuant to section 1008 of this Act. Assistance under this paragraph shall be available only for programs certified by the State to be consistent with any applicable State or areawide solid waste management plan or program. Applicants for technical and financial assistance under this section shall not preclude or foreclose consideration of programs for the

recovery of recyclable materials through source separation or other resource recovery techniques.

[4008(a)(2)(B) amended by PL 96-482]

"(C) There are authorized to be appropriated \$15,000,000 for each of the fiscal years 1978 and 1979 for purposes of this section. There are authorized to be appropriated \$10,000,000 for fiscal year 1980, \$10,000,000 for fiscal year 1981, and \$10,000,000 for fiscal year 1982 for purposes of this paragraph.

[4008(a)(2)(C) amended by PL 96-482]

"(3)(A) There is authorized to be appropriated for the fiscal year beginning October 1, 1981, and for each fiscal year thereafter before October 1, 1986, \$4,000,000 for purposes of making grants to States to carry out section 4003(b). No amount may be appropriated for such purposes for the fiscal year beginning on October 1, 1986, or for any fiscal year thereafter.

"(B) Assistance provided by the Administrator under this paragraph shall be used only for the purposes specified in section 4003(b). Such assistance may not be used for purposes of land acquisition, final facility design, equipment purchase, construction, startup or operation activities.

"(C) Where appropriate, any State receiving assistance under this paragraph may make all or any part of such assistance available to municipalities within the State to carry out the activities specified in section 4003(b)(1)(A) and (B).

[4008(a)(3) added by PL 96-482]

"(b) State Allotment.—The sums appropriated in any fiscal year under subsection (a)(1) shall be allotted by the Administrator among all States, in the ratio that the population in each State bears to the population in all of the States, except that no State shall receive less than one-half of 1 per centum of the sums so allotted in any fiscal year. No State shall receive any grant under this section during any fiscal year when its expenditures of non-Federal funds for other than nonrecurrent expenditures for solid waste management control programs will be less than its expenditures were for such programs during fiscal year 1975, except that such funds may be reduced by an amount equal to their proportionate share of any general reduction of State spending ordered by the Governor or legislature of such State. No State shall receive any grant for solid waste management programs unless the Administrator is satisfied that such grant will be so used as to supplement and, to the extent practicable, increase the level of State, local, regional, or other non-Federal funds that would in the absence of such grant be made available for the maintenance of such programs.

"(c) Distribution of Federal Financial Assistance Within the State.—The Federal assistance allotted to the States under subsection (b) shall be allocated by the State receiving such funds to State, local, regional, and interstate authorities carrying out planning and im-

plementation of the State plan. Such allocation shall be based upon the responsibilities of the respective parties as determined pursuant to section 4006(b).

“(d) Technical Assistance.—(1) The Administrator may provide technical assistance to State and local governments for purposes of developing and implementing State plans. Technical assistance respecting resource recovery and conservation may be provided through resource recovery and conservation panels, established in the Environmental Protection Agency under subtitle B, to assist the State and local governments with respect to particular resource recovery and conservation projects under consideration and to evaluate their effect on the State plan.

[4008(d)(1) designated by PL 96-463 and PL 96-482]

[*Editor's note:* PL 96-463 and 96-482 added different versions of 4008(d)(2) to this Act. the text of each follows:]

“(2) In carrying out this subsection, the Administrator may, upon request, provide technical assistance to States to assist in the removal or modification of legal, institutional, economic, and other impediments to the recycling of used oil. Such impediments may include laws, regulations, and policies, including State procurement policies, which are not favorable to the recycling of used oil.

[4008(d)(2) added by PL 96-463]

“(2) In carrying out this subsection, the Administrator is authorized to provide technical assistance to States, municipalities, regional authorities, and intermunicipal agencies upon request, to assist in the removal or modification of legal, institutional, and economic impediments which have the effect of impeding the development of systems and facilities to recover energy and materials from municipal waste or to conserve energy or materials which contribute to the waste stream. Such impediments may include—

“(A) laws, regulations, and policies, including State and local procurement policies, which are not favorable to resource conservation and recovery policies, systems, and facilities;

“(B) impediments to the financing of facilities to conserve or recover energy and materials from municipal waste through the exercise of State and local authority to issue revenue bonds and the use of State and local credit assistance; and

“(C) impediments to institutional arrangements necessary to undertake projects for the conservation or recovery of energy and materials from municipal waste, including the creation of special districts, authorities, or corporations where necessary having the power to secure the supply of waste of a project, to conserve resources, to implement the project, and to undertake related activities.

[4008(d)(2) added by PL 96-482]

“(e) Special Communities.—(1) The Administrator,

in cooperation with State and local officials, shall identify local governments within the United States (A) having a solid waste disposal facility (i) which is owned by the unit of local government, (ii) for which an order has been issued by the State to cease receiving solid waste for treatment, storage, or disposal, and (iii) which is subject to a State-approved end-use recreation plan, and (B) which are located over an aquifer which is the source of drinking water for any person or public water system which has serious environmental problems resulting from the disposal of such solid waste, including methane migration.

“(2) There is authorized to be appropriated to the Administrator \$2,500,000 for the fiscal year 1980 and \$1,500,000 for each of the fiscal years 1981 and 1982 to make grants to be used for the containment and stabilization of solid waste located at the disposal sites referred to in paragraph (1). Not more than one community in any State shall be eligible for grants under this paragraph and not more than one project in any State shall be eligible for such grants. No unit of local government shall be eligible for grants under this paragraph with respect to any site which exceeds 65 acres in size. [4008(e)(1) and (2) amended and (3) deleted by PL 96-482]

[*Editor's note:* PL 96-463 and PL 96-482 both added a subsection (f) to Section 4008. The text of each follows:]

“(f) Assistance to States for Discretionary Program for Recycled Oil.—(1) The Administrator may make grants to States, which have a State plan approved under section 4007, or which have submitted a State plan for approval under such section, if such plan includes the discretionary provisions described in section 4003(b). Grants under this subsection shall be for purposes of assisting the State in carrying out such discretionary provisions. No grant under this subsection may be used for construction or for the acquisition of land or equipment.

“(2) Grants under this subsection shall be allotted among the States in the same manner as provided in the first sentence of subsection (b).

“(3) No grant may be made under this subsection unless an application therefor is submitted to, and approved by, the Administrator. The application shall be in such form, be submitted in such manner, and contain such information as the Administrator may require.

“(4) For purposes of making grants under this subsection, there are authorized to be appropriated \$5,000,000 for fiscal year 1982 and \$5,000,000 for fiscal year 1983.

[4008(f) added by PL 96-463]

“(f) Assistance to Municipalities for Energy and Materials Conservation and Recovery Planning Activities.—(1) The Administrator is authorized to make grants to municipalities, regional authorities, and intermunicipal agencies to carry out activities described in subparagraphs (A) and (B) of section 4003(b)(1). Such

grants may be made only pursuant to an application submitted to the Administrator by the municipality which application has been approved by the State and determined by the State to be consistent with any State plan approved or submitted under this subtitle or any other appropriate planning carried out by the State.

"(2) There is authorized to be appropriated for the fiscal year beginning October 1, 1981, and for each fiscal year thereafter before October 1, 1986, \$8,000,000 for purposes of making grants to municipalities under this subsection. No amount may be appropriated for such purposes for the fiscal year beginning on October 1, 1986, or for any fiscal year thereafter.

"(3) Assistance provided by the Administrator under this subsection shall be used only for the purposes specified in paragraph (1). Such assistance may not be used for purposes of land acquisition, final facility design, equipment purchase, construction, startup or operation activities.

[4008(f) added by PL 96-482]

"Rural Communities Assistance

"Sec. 4009. (a) In General.—The Administrator shall make grants to States to provide assistance to municipalities with a population of five thousand or less, or counties with a population of ten thousand or less or less than twenty persons per square mile and not within a metropolitan area, for solid waste management facilities (including equipment) necessary to meet the requirements of section 4005 of this Act or restrictions on open burning or other requirements arising under the Clean Air Act or the Federal Water Pollution Control Act. Such assistance shall only be available—

"(1) to any municipality or county which could not feasibly be included in a solid waste management system or facility serving an urbanized, multijurisdictional area because of its distance from such systems;

"(2) where existing or planned solid waste management services or facilities are unavailable or insufficient to comply with the requirements of section 4005 of this Act; and

"(3) for systems which are certified by the State to be consistent with any plans or programs established under any State or areawide planning process.

"(b) Allotment.—The Administrator shall allot the sums appropriated to carry out this section in any fiscal year among the States in accordance with regulations promulgated by him on the basis of the average of the ratio which the population of rural areas of each State bears to the total population of rural areas of all the States, the ratio which the population of counties in each State having less than twenty persons per square mile bears to the total population of such counties in all the States, and the ratio which the population of such low-density counties in each State having 33 per centum or more of all families with incomes not in excess of 125

per centum of the poverty level bears to the total population of such counties in all the States.

"(c) Limit.—The amount of any grant under this section shall not exceed 75 per centum of the costs of the project. No assistance under this section shall be available for the acquisition of land or interests in land.

"(d) Appropriations.—There are authorized to be appropriated \$25,000,000 for each of the fiscal years 1978 and 1979 to carry out this section. There are authorized to be appropriated \$10,000,000 for the fiscal year 1980 and \$15,000,000 for each of the fiscal years 1981 and 1982 to carry out this section.

[4009(d) amended by PL 96-482]

"Subtitle E—Duties of the Secretary of Commerce in Resource and Recovery

"Functions

"Sec. 5001. The Secretary of Commerce shall encourage greater commercialization of proven resource recovery technology by providing—

"(1) accurate specifications for recovered materials;

"(2) stimulation of development of markets for recovered materials;

"(3) promotion of proven technology; and

"(4) a forum for the exchange of technical and economic data relating to resource recovery facilities.

"Development of Specifications for Secondary Materials

"Sec. 5002. The Secretary of Commerce, acting through the National Bureau of Standards, and in conjunction with national standards-setting organizations in resource recovery, shall, after public hearings, and not later than two years after September 1, 1979, publish guidelines for the development of specifications for the classification of materials recovered from waste which were destined for disposal. The specifications shall pertain to the physical and chemical properties and characteristics of such materials with regard to their use in replacing virgin materials in various industrial, commercial, and governmental uses. In establishing such guidelines the Secretary shall also, to the extent feasible, provide such information as may be necessary to assist Federal agencies with procurement of items containing recovered materials. The Secretary shall continue to cooperate with national standards-setting organizations, as may be necessary, to encourage the publication, promulgation and updating of standards for recovered materials and for the use of recovered materials in various industrial, commercial, and governmental uses.

[5002 amended by PL 96-482]

"Development of Markets for Recovered Materials

"Sec. 5003. The Secretary of Commerce shall within

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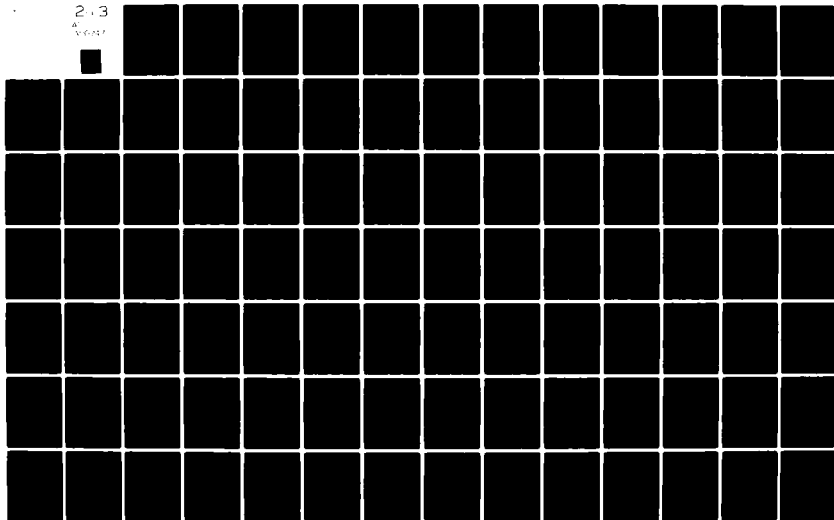
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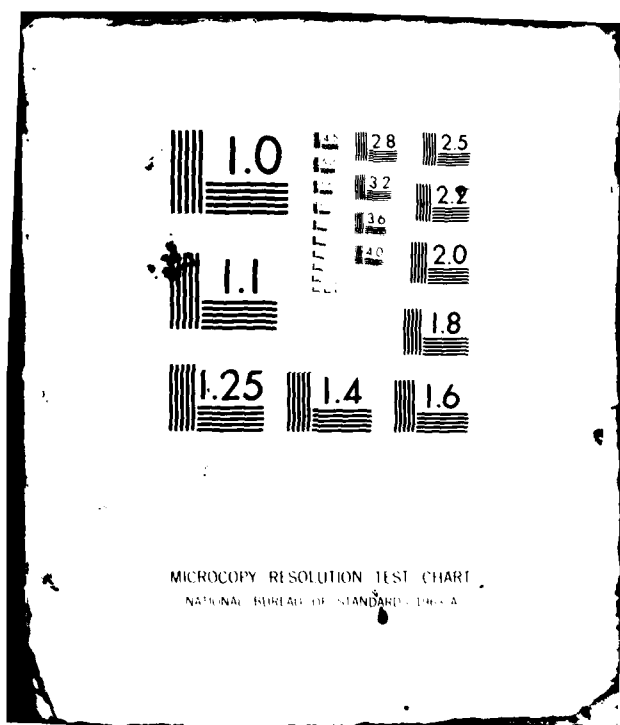
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“(C) are only available at an unreasonable price. Any determination under subparagraph (B) shall be made on the basis of the guidelines of the Bureau of Standards in any case in which such material is covered by such guidelines.

“(2) Agencies that generate heat, mechanical, or electrical energy from fossil fuel in systems that have the technical capability of using energy or fuels derived from solid waste as a primary or supplementary fuel shall use such capability to the maximum extent practicable.

“(3) After the date specified in any applicable guidelines prepared pursuant to subsection (e) of this section contracting, officers shall require that vendors:

“(A) certify that the percentage of recovered materials to be used in the performance of the contract will be at least the amount required by applicable specifications or other contractual requirements and

“(B) estimate the percentage of the total material utilized for the performance of the contract which is recovered materials.

[6003(c)(3) amended by PL 96-482]

“(d) Specifications.—All Federal agencies that have the responsibility for drafting or reviewing specifications for procurement items procured by Federal agencies shall—

“(1) as expeditiously as possible but in any event no later than five years after the date of enactment of this Act, eliminate from such specifications—

“(A) any exclusion of recovered materials and

“(B) any requirement that items be manufactured from virgin materials; and

“(2) within one year after the date of publication of applicable guidelines under subsection (e), or as otherwise specified in such guidelines, assure that such specifications require the use of recovered materials to the maximum extent possible without jeopardizing the intended end use of the item.

[6003(d) revised by PL 96-482]

“(e) Guidelines.—The Administrator, after consultation with the Administrator of General Services, the Secretary of Commerce (acting through the Bureau of Standards), and the Public Printer, shall prepare, and from time to time revise, guidelines for the use of procuring agencies in complying with the requirements of this section. Such guidelines shall—

“(1) designate those items which are or can be produced with recovered materials and whose procurement by procuring agencies will carry out the objectives of this section; and

“(2) set forth recommended practices with respect to the procurement of recovered materials and items containing such materials and with respect to certification by vendors of the percentage of recovered materials used, and shall provide information as to the availability, relative price, and performance of such materials and

items and where appropriate shall recommend the level of recovered material to be contained in the procured product. The Administrator shall prepare final guidelines for at least three product categories, including paper, by May 1, 1981, and for two additional product categories, including construction materials, by September 30, 1982. In making the designation under paragraph (1), the Administrator shall consider, but is not limited in his considerations, to—

“(A) the availability of such items;

“(B) the impact of the procurement of such items by procuring agencies on the volume of solid waste which must be treated, stored or disposed of;

“(C) the economic and technological feasibility of producing and using such items; and

“(D) other uses for such recovered materials.

[6002(e) revised by PL 96-482]

“(f) Procurement of Services.—A procuring agency shall, to the maximum extent practicable, manage or arrange for the procurement of solid waste management services in a manner which maximizes energy and resource recovery.

“(g) Executive Office.—The Office of Procurement Policy in the Executive Office of the President, in cooperation with the Administrator, shall implement the policy expressed in this section. It shall be the responsibility of the Office of Procurement Policy to coordinate this policy with other policies for Federal procurement, in such a way as to maximize the use of recovered resources, and to annually report to the Congress on actions taken by Federal agencies and the progress made in the implementation of such policy.

“Cooperation With the Environmental Protection Agency

“Sec. 6003. (a) General Rule.—All Federal agencies shall assist the Administrator in carrying out his functions under this Act and shall promptly make available all requested information concerning past or present Agency waste management practices and past or present Agency owned, leased, or operated solid or hazardous waste facilities. This information shall be provided in such format as may be determined by the Administrator.

“(b) Information Relating to Energy and Materials Conservation and Recovery.—The Administrator shall collect, maintain, and disseminate information concerning the market potential of energy and materials recovered from solid waste, including materials obtained through source separation, and information concerning the savings potential of conserving resources contributing to the waste stream. The Administrator shall identify the regions in which the increased substitution of such energy for energy derived from fossil fuels and other sources is most likely to be feasible, and provide information on the technical and economic aspects of developing integrated resource conservation or recovery

two years after September 1, 1979, take such actions as may be necessary to—

“(1) identify the geographical location of existing or potential markets for recovered materials;

“(2) identify the economic and technical barriers to the use of recovered materials; and

“(3) encourage the development of new uses for recovered materials.

[5003 amended by PL 96-482]

“Technology Promotion

“Sec. 5004. The Secretary of Commerce is authorized to evaluate the commercial feasibility of resource recovery facilities and to publish the results of such evaluation, and to develop a data base for purposes of assisting persons in choosing such a system.

“Nondiscrimination Requirement

“Sec. 5005. In establishing any policies which may affect the development of new markets for recovered materials and in making any determination concerning whether or not to impose monitoring or other controls on any marketing or transfer of recovered materials, the Secretary of Commerce may consider whether to establish the same or similar policies or impose the same or similar monitoring or other controls on virgin materials.

[5005 added by PL 96-482]

“Authorization of Appropriations

“Sec. 5006. There are authorized to be appropriated to the Secretary of Commerce \$5,000,000 for each of fiscal years 1980, 1981 and 1982 to carry out the purposes of this subtitle.

[5006 added by PL 96-482]

“Subtitle F—Federal Responsibilities

“Application of Federal, State, and Local Law to Federal Facilities

“Sec. 6001. Each department, agency, and instrumentality of the executive, legislative, and judicial branches of the Federal Government (1) having jurisdiction over any solid waste management facility or disposal site, or (2) engaged in any activity resulting, or which may result, in the disposal or management of solid waste or hazardous waste shall be subject to, and complying with, all Federal, State, interstate, and local requirements, both substantive and procedural (including any requirement for permits or reporting or any provisions for injunctive relief and such sanctions as may be imposed by a court to enforce such relief), respecting control and abatement of solid waste or hazardous waste disposal in the same manner, and to the same extent, as any person is subject to such requirements, including the payment of reasonable service charges. Neither the United States, nor any agent,

employee, or officer thereof, shall be immune or exempt from any process or sanction of any State or Federal Court with respect to the enforcement of any such injunctive relief. The President may exempt any solid waste management facility of any department, agency, or instrumentality in the executive branch from compliance with such a requirement if he determines it to be in the paramount interest of the United States to do so. No such exemption shall be granted due to lack of appropriation unless the President shall have specifically requested such appropriation as a part of the budgetary process and the Congress shall have failed to make available such requested appropriation. Any exemption shall be for a period not in excess of one year, but additional exemptions may be granted for periods not to exceed one year upon the President's making a new determination. The President shall report each January to the Congress all exemptions from the requirements of this section granted during the preceding calendar year, together with his reason for granting each such exemption.

“Federal Procurement

“Sec. 6002. (a) Application of Section.—Except as provided in subsection (b), a procuring agency shall comply with the requirements set forth in this section and any regulations issued under this section, with respect to any purchase or acquisition of a procurement item where the purchase price of the item exceeds \$10,000 or where the quantity of such items or of functionally equivalent items purchased or acquired in the course of the preceding fiscal year was \$10,000 or more.

“(b) Procurement Subject to Other Law.—Any procurement, by any procuring agency, which is subject to regulations of the Administrator under section 6004 (as promulgated before the date of enactment of this section under comparable provisions of prior law) shall not be subject to the requirements of this section to the extent that such requirements are inconsistent with such regulations.

“(c) Requirements.—(1) After the date specified in applicable guidelines prepared pursuant to subsection (e) of this section, each procuring agency which procures any items designated in such guidelines shall procure such items composed of the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, considering such guidelines. The decision not to procure such items shall be based on a determination that such procurement items—

[6002(c)(1) amended by PL 96-482]

“(A) are not reasonably available within a reasonable period of time;

“(B) fail to meet the performance standards set forth in the applicable specifications or fail to meet the reasonable performance standards of the procuring agencies; or

systems which provide for the recovery of source-separated materials to be recycled or the conservation of resources. The Administrator shall utilize the authorities of subsection (a) in carrying out this subsection.

[6003 revised by PL 96-482]

"Applicability of Solid Waste Disposal Guidelines to Executive Agencies

"Sec. 6004. (a) Compliance.—(1) If—

"(A) an Executive agency (as defined in section 105 of title 5, United States Code or any unit of the legislative branch of the Federal Government has jurisdiction over any real property or facility the operation or administration of which involves such agency in solid waste management activities, or

[6004(a)(1)(A) amended by PL 96-482]

"(B) such an agency enters into a contract with any person for the operation by such person of any Federal property or facility, and the performance of such contract involves such person in solid waste management activities,

then such agency shall insure compliance with the guidelines recommended under section 1008 and the purposes of this Act in operation or administration of such property or facility, or the performance of such contract, as the case may be.

"(2) Each Executive agency or any unit of the legislative branch of the Federal Government which conducts any activity—

[6004(a)(2) amended by PL 96-482]

"(A) which generates solid waste, and

"(B) which, if conducted by a person other than such agency, would require a permit or license from such agency in order to dispose of such solid waste, shall insure compliance with such guidelines and the purposes of this Act in conducting such activity.

"(3) Each Executive agency which permits the use of Federal property for purposes of disposal of solid waste shall insure compliance with such guidelines and the purposes of this Act in the disposal of such waste.

"(4) The President or the Committee on House Administration of the House of Representatives and the Committee on Rules and Administration of the Senate with regard to any unit of the legislative branch of the Federal Government shall prescribe regulations to carry out this subsection.

[6004(a)(4) amended by PL 96-482]

"(b) Licenses and Permits.—Each Executive agency which issues any license or permit for disposal of solid waste shall, prior to the issuance of such license or permit, consult with the Administrator to insure compliance with guidelines recommended under section 1008 and the purposes of this Act.

"Subtitle G—Miscellaneous Provisions

"Employee Protection

"Sec. 7001. (a) General.—No person shall fire, or in any other way discriminate against, or cause to be fired or discriminated against, any employee or any authorized representative of employees by reason of the fact that such employee or representative has filed, instituted, or caused to be filed or instituted any proceeding under this Act or under any applicable implementation plan, or has testified or is about to testify in any proceeding resulting from the administration or enforcement of the provisions of this Act or of any applicable implementation plan.

"(b) Remedy.—Any employee or a representative of employees who believes that he has been fired or otherwise discriminated against by any person in violation of subsection (a) of this section may, within thirty days after such alleged violation occurs, apply to the Secretary of Labor for a review of such firing or alleged discrimination. A copy of the application shall be sent to such person who shall be the respondent. Upon receipt of such application, the Secretary of Labor shall cause such investigation to be made as he deems appropriate. Such investigation shall provide an opportunity for a public hearing at the request of any party to such review to enable the parties to present information relating to such alleged violation. The parties shall be given written notice of the time and place of the hearing at least five days prior to the hearing. Any such hearing shall be of record and shall be subject to section 554 of title 5 of the United States Code. Upon receiving the report of such investigation, the Secretary of Labor shall make findings of fact. If he finds that such violation did occur, he shall issue a decision, incorporating an order therein and his findings, requiring the party committing such violation to take such affirmative action to abate the violation as the Secretary of Labor deems appropriate, including, but not limited to, the rehiring or reinstatement of the employee or representative of employees to his former position with compensation. If he finds that there was no such violation, he shall issue an order denying the application. Such order issued by the Secretary of Labor under this subparagraph shall be subject to judicial review in the same manner as orders and decisions of the Administrator or subject to judicial review under this Act.

"(c) Costs.—Whenever an order is issued under this section to abate such violation, at the request of the applicant, a sum equal to the aggregate amount of all costs and expenses (including the attorney's fees) as determined by the Secretary of Labor, to have been reasonably incurred by the applicant for, or in connection with, the institution and prosecution of such proceedings, shall be assessed against the person committing such violation.

"(d) Exception.—This section shall have no applica-

tion to any employee who, acting without direction from his employer (or his agent) deliberately violates any requirement of this Act.

"(e) Employment Shifts and Loss.—The Administrator shall conduct continuing evaluations of potential loss or shifts of employment which may result from the administration or enforcement of the provisions of this Act and applicable implementation plans, including, where appropriate, investigating threatened plant closures or reductions in employment allegedly resulting from such administration or enforcement. Any employee who is discharged, or laid off, threatened with discharge or layoff, or otherwise discriminated against by any person because of the alleged results of such administration or enforcement, or any representative of such employee, may request the Administrator to conduct a full investigation of the matter. The Administrator shall thereupon investigate the matter and, at the request of any party, shall hold public hearings on not less than five days' notice, and shall at such hearings require the parties, including the employer involved, to present information relating to the actual or potential effect of such administration or enforcement on employment and on any alleged discharge, layoff, or other discrimination and the detailed reasons or justification therefor. Any such hearing shall be of record and shall be subject to section 554 of title 5 of the United States Code. Upon receiving the report of such investigation, the Administrator shall make findings of fact as to the effect of such administration or enforcement on employment and on the alleged discharge, layoff, or discrimination and shall make such recommendations as he deems appropriate. Such report, findings, and recommendations shall be available to the public. Nothing in this subsection shall be construed to require or authorize the Administrator or any State to modify or withdraw any standard, limitation, or any other requirement of this Act or any applicable implementation plan.

"(f) Occupational Safety and Health.—In order to assist the Secretary of Labor and the Director of the National Institute for Occupational Safety and Health in carrying out their duties under the Occupational Safety and Health Act of 1970, the Administrator shall—

"(1) provide the following information, as such information becomes available, to the Secretary and the Director:

"(A) the identity of any hazardous waste generation, treatment, storage, disposal facility or site where cleanup is planned or underway;

"(B) information identifying the hazards to which persons working at a hazardous waste generation, treatment, storage, disposal facility or site or otherwise handling hazardous waste may be exposed, the nature and extent of the exposure, and methods to protect workers from such hazards; and

"(C) incidents of worker injury or harm at a hazard-

ous waste generation, treatment, storage or disposal facility or site; and

"(2) notify the Secretary and the Director of the Administrator's receipt of notifications under section 3010 or reports under sections 3002, 3003, and 3004 of this title and make such notifications and reports available to the Secretary and the Director.

[7001(f) added by PL 96-482]

"Citizen Suits

"Sec. 7002. (a) In General.—Except as provided in subsection (b) or (c) of this section, any person may commence a civil action on his own behalf—

"(1) against any person (including (a) the United States, and (b) any other governmental instrumentality or agency, to the extent permitted by the eleventh amendment to the Constitution) who is alleged to be in violation of any permit, standard, regulation, condition, requirement, or order which has become effective pursuant to this Act; or

"(2) against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under this Act which is not discretionary with the Administrator.

Any action under paragraph (a)(1) of this subsection shall be brought in the district court for the district in which the alleged violation occurred. Any action brought under paragraph (a)(2) of this subsection may be brought in the district court for the district in which the alleged violation occurred or in the District Court of the District of Columbia. The district court shall have jurisdiction, without regard to the amount in controversy or the citizenship of the parties, to enforce such regulation or order, or to order the Administrator to perform such act or duty as the case may be.

"(b) Actions Prohibited.—No action may be commenced under paragraph (a)(1) of this section—

"(1) prior to sixty days after the plaintiff has given notice of the violation (A) to the Administrator; (B) to the State in which the alleged violation occurs; and (C) to any alleged violator of such permit, standard, regulation, condition, requirement, or order; or

"(2) if the Administrator or State has commenced and is diligently prosecuting a civil or criminal action in a court of the United States or a State to require compliance with such permit, standard, regulation, condition, requirement, or order: *Provided, however,* That in any such action in a court of the United States, any person may intervene as a matter of right.

"(c) Notice.—No action may be commenced under paragraph (a)(2) of this section prior to sixty days after the plaintiff has given notice to the Administrator that he will commence such action, except that such action may be brought immediately after such notification in the case of an action under this section respecting a violation of subtitle C of this Act. Notice under this subsection shall be given in such manner as the Ad-

ministrator shall prescribe by regulation. Any action respecting a violation under this Act may be brought under this section only in the judicial district in which such alleged violation occurs.

"(d) Intervention.—In any action under this section the Administrator, if not a party, may intervene as a matter of right.

"(e) Costs.—The court, in issuing any final order in any action brought pursuant to this section, may award costs of litigation (including reasonable attorney and expert witness fees) to any party, whenever the court determines such an award is appropriate. The court may, if a temporary restraining order or preliminary injunction is sought, require the filing of a bond or equivalent security in accordance with the Federal Rules of Civil Procedure.

"(f) Other Rights Preserved.—Nothing in this section shall restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any standard or requirement relating to the management of solid waste or hazardous waste, or to seek any other relief (including relief against the Administrator or a State agency).

"Imminent Hazard

"Sec. 7003. (a) Authority of Administrator.—Notwithstanding any other provision of this Act, upon receipt of evidence that the handling, storage, treatment, transportation or disposal of any solid waste or hazardous waste may present an imminent and substantial endangerment to health or the environment, the Administrator may bring suit on behalf of the United States in the appropriate district court to immediately restrain any person contributing to such handling, storage, treatment, transportation or disposal to stop such handling, storage, treatment, transportation, or disposal or to take such other action as may be necessary. The Administrator shall provide notice to the affected State of any such suit. The Administrator may also, after notice to the affected State, take other action under this section including, but not limited to, issuing such orders as may be necessary to protect public health and the environment.

"(b) Violations.—Any person who willfully violates, or fails or refuses to comply with, any order of the Administrator under subsection (a) may, in an action brought in the appropriate United States district court to enforce such order, be fined not more than \$5,000 for each day in which such violation occurs or such failure to comply continues.

[7003(a) designated and amended and (b) added by PL 96-482]

"Petition for Regulations: Public Participation

"Sec. 7004. (a) Petition.—Any person may petition the Administrator for the promulgation, amendment, or repeal of any regulation under this Act. Within a

reasonable time following receipt of such petition, the Administrator shall take action with respect to such petition and shall publish notice of such action in the Federal Register together with the reasons therefor.

"(b)(1) Public Participation.—Public participation in the development, revision, implementation, and enforcement of any regulation, guideline, information, or program under this Act shall be provided for, encouraged, and assisted by the Administrator and the States. The Administrator, in cooperation with the States, shall develop and publish minimum guidelines for public participation in such processes.

[7004(b)(1) designated by PL 96-482]

"(2) Before the issuing of a permit to any person with any respect to any facility for the treatment, storage, or disposal of hazardous wastes under section 3005, the Administrator shall—

"(A) cause to be published in major local newspapers of general circulation and broadcast over local radio stations notice of the agency's intention to issue such permit, and

"(B) transmit in writing notice of the agency's intention to issue such permit to each unit of local government having jurisdiction over the area in which such facility is proposed to be located and to each State agency having any authority under State law with respect to the construction or operation of such facility.

If within 45 days the Administrator receives written notice of opposition to the agency's intention to issue such permit and a request for a hearing, or if the Administrator determines on his own initiative, he shall hold an informal public hearing (including an opportunity for presentation of written and oral views) on whether he should issue a permit for the proposed facility. Whenever possible the Administrator shall schedule such hearing at a location convenient to the nearest population center to such proposed facility and give notice in the aforementioned manner of the date, time, and subject matter of such hearing. No State program which provides for the issuance of permits referred to in this paragraph may be authorized by the Administrator under section 3006 unless such program provides for the notice and hearing required by the paragraph.

[7004(b)(2) added by PL 96-482]

"Separability

"Sec. 7005. If any provision of this Act, or the application of any provision of this Act to any person or circumstance, is held invalid, the application of such provision to other persons or circumstances, and the remainder of this Act, shall not be affected thereby.

"Judicial Review

"Sec. 7006. (a) Review of Final Regulations and Certain Petitions.—Any judicial review of final regulations promulgated pursuant to this Act and the Administrator's denial of any petition for the pro-

mulgation, amendment, or repeal of any regulation under this Act shall be in accordance with sections 701 through 706 of title 5 of the United States Code, except that—

“(1) a petition for review of action of the Administrator in promulgating any regulation, or requirement under this Act or denying any petition for the promulgation, amendment or repeal of any regulation under this Act may be filed only in the United States Court of Appeals for the District of Columbia, and such petition shall be filed within ninety days from the date of such promulgation or denial or after such date if such petition for review is based solely on grounds arising after such ninetieth day; action of the Administrator with respect to to which review could have been obtained under this subsection shall not be subject to judicial review in civil or criminal proceedings for enforcement; and

[7006(a) designated and (a)(1) amended by PL 96-482]

“(2) in any judicial proceeding brought under this section in which review is sought of a determination under this Act required to be made on the record after notice and opportunity for hearing, if a party seeking review under this Act applies to the court for leave to adduce additional evidence, and shows to the satisfaction of the court that the information is material and that there were reasonable grounds for the failure to adduce such evidence in the proceeding before the Administrator, the court may order such additional evidence (and evidence in rebuttal thereof) to be taken before the Administrator, and to be adduced upon the hearing in such manner and upon such terms and conditions as the court may deem proper; the Administrator may modify his findings as to the facts, or make new findings, by reason of the additional evidence so taken, and he shall file with the court such modified or new findings and his recommendation, if any for the modification or setting aside of his original order, with the return of such additional evidence.

[7006(a)(2) amended by PL 96-482]

“(b) Review of Certain Actions Under Sections 3005 and 3006.—Review of the Administrator's action (1) in issuing, denying, modifying or revoking any permit under section 3005, or (2) in granting, denying, or withdrawing authorization or interim authorization under section 3006, may be had by any interested person in the Circuit Court of Appeals of the United States for the Federal judicial district in which such person resides or transacts such business upon application by such person. Any such application shall be made within ninety days from the date of such issuance, denial, modification, revocation, grant, or withdrawal, or after such date only if such application is based solely on grounds which arose after such ninetieth day. Such review shall be in accordance with sections 701 through 706 of title 5 of the United States Code.

[7006(b) added by PL 96-482]

“Grants or Contracts for Training Projects

“Sec. 7007. (a) General Authority.—The Administrator is authorized to make grants to, and contracts with any eligible organization. For purposes of this section the term “eligible organization” means a State or interstate agency, a municipality, educational institution, and any other organization which is capable of effectively carrying out a project which may be funded by grant under subsection (b) of this section.

“(b) Purposes.—(1) Subject to the provisions of paragraph (2), grants or contracts may be made to pay all or a part of the costs, as may be determined by the Administrator, of any project operated or to be operated by an eligible organization, which is designed—

“(A) to develop, expand, or carry out a program (which may combine training, education, and employment) for training persons for occupations involving the management, supervision, design, operation, or maintenance of solid waste management and resource recovery equipment and facilities; or

“(B) to train instructors and supervisory personnel to train or supervise persons in occupations involving the design, operation, and maintenance of solid waste management and resource recovery equipment and facilities.

“(2) A grant or contract authorized by paragraph (1) of this subsection may be made only upon application to the Administrator at such time or times and containing such information as he may prescribe, except that no such application shall be approved unless it provides for the same procedures and reports (and access to such reports and to other records) as required by section 207(b)(4) and (5) (as in effect before the date of the enactment of Resource Conservation and Recovery Act of 1976) with respect to applications made under such section (as in effect before the date of the enactment of Resource Conservation and Recovery Act of 1976).

“(c) Study.—The Administrator shall make a complete investigation and study to determine—

“(1) the need for additional trained State and local personnel to carry out plans assisted under this Act and other solid waste and resource recovery programs;

“(2) means of using existing training programs to train such personnel; and

“(3) the extent and nature of obstacles to employment and occupational advancement in the solid waste management and resource recovery field which may limit either available manpower or the advancement of personnel in such field.

He shall report the results of such investigation and study, including his recommendations to the President and the Congress.

“Payments

“Sec. 7008. (a) General Rule.—Payments of grants under this Act may be made (after necessary adjustment

on account of previously made underpayments or overpayments) in advance or by way of reimbursement, and in such installments and on such conditions as the Administrator may determine.

"(b) Prohibition.—No grant may be made under this Act to any private profitmaking organization.

"Labor Standards

"Sec. 7009. No grant for a project of construction under this Act shall be made unless the Administrator finds that the application contains or is supported by reasonable assurance that all laborers and mechanics employed by contractors or subcontractors on projects of the type covered by the Davis-Bacon Act, as amended (40 U.S.C. 276a-276a-5), will be paid wages at rates not less than those prevailing on similar work in the locality as determined by the Secretary of Labor in accordance with that Act; and the Secretary of Labor shall have with respect to the labor standards specified in this section the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (15 F.R. 3176; 5 U.S.C. 1332-5) and section 2 of the Act of June 13, 1934, as amended (40 U.S.C. 276c).

[7009 amended by PL 96-482]

"Subtitle H—Research, Development, Demonstration, and Information

"Research, Demonstrations, Training, and Other Activities

"Sec. 8001. (a) General Authority.—The Administrator, alone or after consultation with the Administrator of the Federal Energy Administration, the Administrator of the Energy Research and Development Administration, or the Chairman of the Federal Power Commission, shall conduct, and encourage, cooperate with, and render financial and other assistance to appropriate public (whether Federal, State, interstate, or local) authorities, agencies, and institutions, private agencies and institutions, and individuals in the conduct of, and promote the coordination of, research, investigations, experiments, training, demonstrations, surveys, public education programs, and studies relating to—

"(1) any adverse health and welfare effects of the release into the environment of material present in solid waste, and methods to eliminate such effects;

"(2) the operation and financing of solid waste management programs;

"(3) the planning, implementation, and operation of resource recovery and resource conservation systems and hazardous waste management systems, including the marketing of recovered resources;

"(4) the production of usable forms of recovered resources, including fuel, from solid waste;

"(5) the reduction of the amount of such waste and unsalvageable waste materials;

"(6) the development and application of new and improved methods of collecting and disposing of solid waste and processing and recovering materials and energy from solid wastes;

"(7) the identification of solid waste components and potential materials and energy recoverable from such waste components;

"(8) small scale and low technology solid waste management systems, including but limited to, resource recovery source separation systems;

"(9) methods to improve the performance characteristics of resources recovered from solid waste and the relationship of such performance characteristics to available and potentially available markets for such resources;

"(10) improvements in land disposal practices for solid waste (including sludge) which may reduce the adverse environmental effects of such disposal and other aspects of solid waste disposal on land, including means for reducing the harmful environmental effects of earlier and existing landfills, means for restoring areas damaged by such earlier or existing landfills, means for rendering landfills safe for purposes of construction and other uses, and techniques of recovering materials and energy from landfills;

"(11) methods for the sound disposal of, or recovery of resources, including energy, from, sludge (including sludge from pollution control and treatment facilities, coal slurry pipelines, and other sources);

"(12) methods of hazardous waste management, including methods of rendering such waste environmentally safe; and

"(13) any adverse effects on air quality (particularly with regard to the emission of heavy metals) which result from solid waste which is burned (either alone or in conjunction with other substances) for purposes of treatment, disposal or energy recovery.

"(b) Management Program.—(1)(A) In carrying out his functions pursuant to this Act and any other Federal legislation respecting solid waste or discarded material research, development, and demonstrations, the Administrator shall establish a management program or system to insure the coordination of all such activities and to facilitate and accelerate the process of development of sound new technology (or other discoveries) from the research phase, through development, and into the demonstration phase.

"(B) The Administrator shall (i) assist, on the basis of any research projects which are developed with assistance under this Act or without Federal assistance, the construction of pilot plant facilities for the purpose of investigating or testing the technological feasibility of any promising new fuel, energy, or resource recovery or resource conservation method or technology; and (ii) demonstrate each such method and technology that appears justified by an evaluation at such pilot plant stage or at a pilot plant stage developed without Federal

assistance. Each such demonstration shall incorporate new or innovative technical advances or shall apply such advances to different circumstances and conditions, for the purpose of evaluating design concepts or to test the performance, efficiency, and economic feasibility of a particular method or technology under actual operating conditions. Each such demonstration shall be so planned and designed that, if successful, it can be expanded or utilized directly as a full-scale operational fuel, energy, or resource recovery or resource conservation facility.

"(2) Any energy-related research, development, or demonstration project for the conversion including bio-conversion, of solid waste carried out by the Environmental Protection Agency or by the Energy Research and Development Administration pursuant to this or any other Act shall be administered in accordance with the May 7, 1976, Interagency Agreement between the Environmental Protection Agency and the Energy Research and Development Administration on the Development of Energy from Solid Wastes and specifically, that in accordance with this agreement, (A) for those energy-related projects of mutual interest, planning will be conducted jointly by the Environmental Protection Agency and the Energy Research and Development Administration, following which project responsibility will be assigned to one agency; (B) energy-related portions of projects for recovery of synthetic fuels or other forms of energy from solid waste shall be the responsibility of the Energy Research and Development Administration; (C) the Environmental Protection Agency shall retain responsibility for the environmental, economic, and institutional aspects of solid waste projects and for assurance that such projects are consistent with any applicable suggested guidelines published pursuant to section 1008, and any applicable State or regional solid waste management plan; and (D) any activities undertaken under provisions of sections 8002 and 8003 as related to energy; as related to energy or synthetic fuels recovery from waste; or as related to energy conservation shall be accomplished through coordination and consultation with the Energy Research and Development Administration.

"(c) Authorities.—(1) In carrying out subsection (a) of this section respecting solid waste research, studies, development, and demonstration, except as otherwise specifically provided in section 8004(d), the Administrator may make grants to or enter into contracts (including contracts for construction) with, public agencies and authorities or private persons.

"(2) Contracts for research, development, or demonstrations or for both (including contracts for construction) shall be made in accordance with and subject to the limitations provided with respect to research contracts of the military departments in title 10, United States Code, section 2353, except that the determina-

tion, approval, and certification required thereby shall be made by the Administrator.

"(3) Any invention made or conceived in the course of, or under, any contract under this Act shall be subject to section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 to the same extent and in the same manner as inventions made or conceived in the course of contracts under such Act, except that in applying such section, the Environmental Protection Agency shall be substituted for the Energy Research and Development Administration and the words 'solid waste' shall be substituted for the word 'energy' where appropriate.

"(4) For carrying out the purpose of this Act the Administrator may detail personnel of the Environmental Protection Agency to agencies eligible for assistance under this section.

"Special Studies; Plans for Research, Development, and Demonstrations

"Sec. 8002. (a) Glass and Plastic.—The Administrator shall undertake a study and publish a report on resource recovery from glass and plastic waste, including a scientific, technological, and economic investigation of potential solutions to implement such recovery.

"(b) Composition of Waste Stream.—The Administrator shall undertake a systematic study of the composition of the solid waste stream and of anticipated future changes in the composition of such stream and shall publish a report containing the results of such study and quantitatively evaluating the potential utility of such components.

"(c) Priorities Study.—For purposes of determining priorities for research on recovery of materials and energy from solid waste and developing materials and energy recovery research, development, and demonstration strategies, the Administrator shall review, and make a study of, the various existing and promising techniques of energy recovery from solid waste (including, but not limited to, waterwall furnace incinerators, dry shredded fuel systems, pyrolysis, densified refuse-derived fuel systems, anaerobic digestion, and fuel and feedstock preparation systems). In carrying out such study the Administrator shall investigate with respect to each such technique—

"(1) the degree of public need for the potential results of such research development, or demonstration,

"(2) the potential for research, development, and demonstration without Federal action, including the degree of restraint on such potential posed by the risks involved, and

"(3) the magnitude of effort and period of time necessary to develop the technology to the point where Federal assistance can be ended.

"(d) Small-Scale and Low Technology Study.—The Administrator shall undertake a comprehensive study

and analysis of, and publish a report on, systems of small-scale and low technology solid waste management, including household resource recovery and resource recovery systems which have special application to multiple dwelling units and high density housing and office complexes. Such study and analysis shall include an investigation of the degree to which such systems could contribute to energy conservation.

“(e) Front-End Source Separation.—The Administrator shall undertake research and studies concerning the compatibility of front-end source separation systems with high technology resource recovery systems and shall publish a report containing the results of such research and studies.

“(f) Mining Waste.—The Administrator, in consultation with the Secretary of the Interior, shall conduct a detailed and comprehensive study on the adverse effects of solid wastes from active and abandoned surface and underground mines on the environment, including, but not limited to, the effects of such wastes on humans, water, air, health, welfare, and natural resources, and on the adequacy of means and measures currently employed by the mining industry, Government agencies, and others to dispose of and utilize such solid wastes and to prevent or substantially mitigate such adverse effects. Such study shall include an analysis of—

“(1) the sources and volume of discarded material generated per year from mining;

“(2) present disposal practices;

“(3) potential dangers to human health and the environment from surface runoff of leachate and air pollution by dust;

“(4) alternatives to current disposal methods;

“(5) the cost of those alternatives in terms of the impact on mine product costs; and

“(6) potential for use of discarded material as a secondary source of the mine product.

Not later than thirty-six months after the date of the enactment of the Solid Waste Disposal Act Amendments of 1980 the Administrator shall publish a report of such study and shall include appropriate findings and recommendations for Federal and non-Federal actions concerning such effects. Such report shall be submitted to the Committee on Environment and Public Works of the United States Senate and the Committee on Interstate and Foreign Commerce of the United States House of Representatives.

“(g) Sludge.—The Administrator shall undertake a comprehensive study and publish a report on sludge. Such study shall include an analysis of—

“(1) what types of solid waste (including but not limited to sewage and pollution treatment residues and other residues from industrial operations such as extraction of oil from shale, liquefaction and gasification of coal and coal slurry pipeline operations) shall be classified as sludge;

“(2) the effects of air and water pollution legislation on the creation of large volumes of sludge;

“(3) the amounts of sludge originating in each State and in each industry producing sludge;

“(4) methods of disposal of such sludge, including the cost, efficiency and effectiveness of such methods;

“(5) alternative methods for the use of sludge, including agricultural applications of sludge and energy recovery from sludge; and

“(6) methods to reclaim areas which have been used for the disposal of sludge or which have been damaged by sludge.

“(h) Tires.—The Administrator shall undertake a study and publish a report respecting discarded motor vehicle tires which shall include an analysis of the problems involved in the collection, recovery of resources including energy, and use of such tires.

“(i) Resource Recovery Facilities.—The Administrator shall conduct research and report on the economics of, and impediments, to the effective functioning of resource recovery facilities.

“(j) Resource Conservation Committee.—(1) The Administrator shall serve as Chairman of a Committee composed of himself, the Secretary of Commerce, the Secretary of Labor, the Chairman of the Council on Environmental Quality, the Secretary of Treasury, the Secretary of the Interior, the Secretary of Energy, the Chairman of the Council of Economic Advisors, and a representative of the Office of Management and Budget, which shall conduct a full and complete investigation and study of all aspects of the economic, social and environmental consequences of resource conservation with respect to—

“(A) the appropriateness of recommended incentives and disincentives to foster resource conservation;

“(B) the effect of existing public policies (including subsidies and economic incentives and disincentives, percentage depletion allowances, capital gains treatment and other tax incentives and disincentives) upon resource conservation, and the likely effect of the modification or elimination of such incentives and disincentives upon resource conservation;

“(C) the appropriateness and feasibility of restricting the manufacture or use of categories of consumer products as a resource conservation strategy;

“(D) the appropriateness and feasibility of employing as a resource conservation strategy the imposition of solid waste management charges on consumer products, which charges would reflect the costs of solid waste management services, litter pickup, the value of recoverable components of such product, final disposal, and any social value associated with the nonrecycling or uncontrolled disposal of such product; and

“(E) the need for further research, development, and demonstration in the area of resource conservation.

“(2) The study required in paragraph (1)(D) may include pilot scale projects, and shall consider and

evaluate alternative strategies with respect to—

“(A) the product categories on which such charges would be imposed;

“(B) the appropriate state in the production of such consumer product at which to levy such charge;

“(C) appropriate criteria for establishing such charges for each consumer product category;

“(D) methods for the adjustment of such charges to reflect actions such as recycling which would reduce the overall quantities of solid waste requiring disposal; and

“(E) procedures for amending, modifying, or revising such charges to reflect changing conditions.

“(3) The design for the study required in paragraph (1)(D) of this subsection shall include timetables for the completion of the study. A preliminary report putting forth the study design shall be sent to the President and the Congress within six months following enactment of this section and followup reports shall be sent six months thereafter. Each recommendation resulting from the study shall include at least two alternatives to the proposed recommendation.

“(4) The results of such investigation and study, including recommendations, shall be reported to the President and the Congress not later than two years after enactment of this subsection.

“(5) There are authorized to be appropriated not to exceed \$2,000,000 to carry out this subsection.

“(k) Airport Landfills.—The Administrator shall undertake a comprehensive study and analysis of and publish a report on systems to alleviate the hazards to aviation from birds congregating and feeding on landfills in the vicinity of airports.

“(l) Completion of Research and Studies.—The Administrator shall complete the research and studies, and submit the reports, required under subsections (b), (c), (d), (e), (f), (g), and (k) not later than October 1, 1978. The Administrator shall complete the research and studies, and submit the reports, required under subsections (a), (h), and (i) not later than October 1, 1979. Upon completion, each study specified in subsections (a) through (k) of this section, the Administrator shall prepare a plan for research, development, and demonstration respecting the findings of the study and shall submit any legislative recommendations resulting from such study to appropriate committees of Congress.

[8002(m)—(p) added by PL 96-482]

“(m) Drilling Fluids, Produced Waters, and Other Wastes Associated With the Exploration, Development, or Production of Crude Oil or Natural Gas or Geothermal Energy.—(1) The Administrator shall conduct a detailed and comprehensive study and submit a report on the adverse effects, if any, of drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil or natural gas or geothermal energy on human health and the environment, including, but not limited to the effects of

such wastes on humans, water, air, health, welfare, and natural resources and on the adequacy of means and measures currently employed by the oil and gas and geothermal drilling and production industry, Government agencies, and others to dispose of and utilize such wastes and to prevent or substantially mitigate such adverse effects. Such study shall include an analysis of—

“(A) the sources and volume of discarded material generated per year from such wastes;

“(B) present disposal practices;

“(C) potential danger to human health and the environment from the surface runoff or leachate;

“(D) documented cases which prove or have caused danger to human health and the environment from surface runoff or leachate;

“(E) alternatives to current disposal methods;

“(F) the cost of such alternatives; and

“(G) the impact of those alternatives on the exploration for, and development and production of, crude oil and natural gas or geothermal energy.

In furtherance of this study, the Administrator shall, as he deems appropriate, review studies and other actions of other Federal agencies concerning such wastes with a view toward avoiding duplication of effort and the need to expedite such study. The Administrator shall publish a report of such study and shall include appropriate findings and recommendations for Federal and non-Federal actions concerning such effects.

“(2) The Administrator shall complete the research and study and submit the report required under paragraph (1) not later than twenty-four months from the date of enactment of the Solid Waste Disposal Act Amendments of 1980. Upon completion of the study, the Administrator shall prepare a summary of the findings of the study, a plan for research, development, and demonstration respecting the findings of the study, and shall submit the findings and the study, along with any recommendations resulting from such study, to the Committee on Environment and Public Works of the United States Senate and the Committee on Interstate and Foreign Commerce of the United States House of Representatives.

“(3) There are authorized to be appropriated not to exceed \$1,000,000 to carry out the provisions of this subsection.

“(n) Materials Generated From the Combustion of Coal and Other Fossil Fuels.—The Administrator shall conduct a detailed and comprehensive study and submit a report on the adverse effects on human health and the environment, if any, of the disposal and utilization of fly ash waste, bottom ash waste, slag waste, flue gas emission control waste, and other byproduct materials generated primarily from the combustion of coal or other fossil fuels. Such study shall include an analysis of—

"(1) the source and volumes of such material generated per year;

"(2) present disposal and utilization practices;

"(3) potential danger, if any, to human health and the environment from the disposal and reuse of such materials;

"(4) documented cases in which danger to human health or the environment from surface runoff or leachate has been proved;

"(5) alternatives to current disposal methods;

"(6) the costs of such alternatives;

"(7) the impact of those alternatives on the use of coal and other natural resources; and

"(8) the current and potential utilization of such materials.

In furtherance of this study, the Administrator shall, as he deems appropriate, review studies and other actions of other Federal and State agencies concerning such material and invite participation by other concerned parties, including industry and other Federal and State agencies, with a view toward avoiding duplication of effort. The Administrator shall publish a report on such study, which shall include appropriate findings, not later than twenty-four months after the enactment of the Solid Waste Disposal Act Amendments of 1980. Such study and findings shall be submitted to the Committee on Environment and Public Works of the United States Senate and the Committee on Interstate and Foreign Commerce of the United States House of Representatives.

"(o) Cement Kiln Dust Waste.—The Administrator shall conduct a detailed and comprehensive study of the adverse effects on human health and the environment, if any, of the disposal of cement kiln dust waste. Such study shall include an analysis of—

"(1) the source and volumes of such materials generated per year;

"(2) present disposal practices;

"(3) potential danger, if any, to human health and the environment from the disposal of such materials;

"(4) documented cases in which danger to human health or the environment has been proved;

"(5) alternatives to current disposal methods;

"(6) the costs of such alternatives;

"(7) the impact of those alternatives on the use of natural resources; and

"(8) the current and potential utilization of such materials.

In furtherance of this study the Administrator shall, as he deems appropriate, review studies and other actions of other Federal and State agencies concerning such waste or materials and invite participation by other concerned parties, including industry and other Federal and State agencies, with a view toward avoiding duplication of effort. The Administrator shall publish a report of such study, which shall include appropriate findings, not later than thirty-six months after the date of enact-

ment of the Solid Waste Disposal Act Amendments of 1980. Such report shall be submitted to the Committee on Environment and Public Works of the United States Senate and the Committee on Interstate and Foreign Commerce of the United States House of Representatives.

"(p) Materials Generated From the Extraction, Beneficiation, and Processing of Ores and Minerals, Including Phosphate Rock and Overburden From Uranium Mining.—The Administrator shall conduct a detailed and comprehensive study on the adverse effects on human health and the environment, if any, of the disposal and utilization of solid waste from the extraction, beneficiation, and processing of ores and minerals, including phosphate rock and overburden from uranium mining. Such study shall be conducted in conjunction with the study of mining wastes required by subsection (f) of this section and shall include an analysis of—

"(1) the source and volumes of such materials generated per year;

"(2) present disposal and utilization practices;

"(3) potential danger, if any, to human health and the environment from the disposal and reuse of such materials;

"(4) documented cases in which danger to human health or the environment has been proved;

"(5) alternatives to current disposal methods;

"(6) the costs of such alternatives;

"(7) the impact of those alternatives on the use of phosphate rock and uranium ore, and other natural resources; and

"(8) the current and potential utilization of such materials.

In furtherance of this study, the Administrator shall, as he deems appropriate, review studies and other actions of other Federal and State agencies concerning such waste or materials and invite participation by other concerned parties, including industry and other Federal and State agencies, with a view toward avoiding duplication of effort. The Administrator shall publish a report of such study, which shall include appropriate findings, in conjunction with the publication of the report of the study of mining wastes required to be conducted under subsection (f) of this section. Such report and findings shall be submitted to the Committee on Environment and Public Works of the United States Senate and the Committee on Interstate and Foreign Commerce of the United States House of Representatives.

"(q) Authorization of Appropriations.—There are authorized to be appropriated not to exceed \$8,000,000 for the fiscal years 1978 and 1979 to carry out this section other than subsection (j).

"Coordination, Collection, and Dissemination of Information

"Sec. 8003. (a) Information.—The Administrator

shall develop, collect, evaluate, and coordinate information on—

“(1) methods and costs of the collection of solid waste;

“(2) solid waste management practices, including data on the different management methods and the cost, operation, and maintenance of such methods;

“(3) the amounts and percentages of resources (including energy) that can be recovered from solid waste by use of various solid waste management practices and various technologies;

“(4) methods available to reduce the amount of solid waste that is generated;

“(5) existing and developing technologies for the recovery of energy or materials from solid waste and the costs, reliability, and risks associated with such technologies;

“(6) hazardous solid waste, including incidents of damage resulting from the disposal of hazardous solid wastes; inherently and potentially hazardous solid wastes; methods of neutralizing or properly disposing of hazardous solid wastes; facilities that properly dispose of hazardous wastes;

“(7) methods of financing resource recovery facilities or, sanitary landfills, or hazardous solid waste treatment facilities, whichever is appropriate for the entity developing such facility or landfill (taking into account the amount of solid waste reasonably expected to be available to such entity);

“(8) the availability of markets for the purchase of resources, either materials or energy, recovered from solid waste; and

“(9) research and development projects respecting solid waste management.

“(b) Library.—(1) The Administrator shall establish and maintain a central reference library for (A) the materials collected pursuant to subsection (a) of this section and (B) the actual performance and cost effectiveness records and other data and information with respect to—

“(i) the various methods of energy and resource recovery from solid waste,

“(ii) the various systems and means of resource conservation,

“(iii) the various systems and technologies for collection, transport, storage, treatment, and final disposition of solid waste, and

“(iv) other aspects of solid waste and hazardous solid waste management.

Such central reference library shall also contain, but not be limited to, the model codes and model accounting systems developed under this section, the information collected under subsection (d), and, subject to any applicable requirements of confidentiality, information respecting any aspect of solid waste provided by officers and employees of the Environmental Protection Agency which has been acquired by them in the conduct of their

functions under this Act and which may be of value to Federal, State, and local authorities and other persons.

“(2) Information in the central reference library shall, to the extent practicable, be collated, analyzed, verified, and published and shall be made available to State and local governments and other persons at reasonable times and subject to such reasonable charges as may be necessary to defray expenses of making such information available.

“(c) Model Accounting System.—In order to assist State and local governments in determining the cost and revenues associated with the collection and disposal of solid waste and with resource recovery operations, the Administrator shall develop and publish a recommended model cost and revenue accounting system applicable to the solid waste management functions of State and local governments. Such system shall be in accordance with generally accepted accounting principles. The Administrator shall periodically, but not less frequently than once every five years, review such accounting system and revise it as necessary.

“(d) Model Codes.—The Administrator is authorized, in cooperation with appropriate State and local agencies, to recommend model codes, ordinances, and statutes, providing for sound solid waste management.

“(e) Information Programs.—(1) The Administrator shall implement a program for the rapid dissemination of information on solid waste management, hazardous waste management, resource conservation, and methods of resource recovery from solid waste, including the results of any relevant research, investigations, experiments, surveys, studies, or other information which may be useful in the implementation of new or improved solid waste management practices and methods and information on any other technical, managerial, financial, or market aspect of resource conservation and recovery facilities.

“(2) The Administrator shall develop and implement educational programs to promote citizen understanding of the need for environmentally sound solid waste management practices.

“(f) Coordination.—In collecting and disseminating information under this section, the Administrator shall coordinate his actions and cooperate to the maximum extent possible with State and local authorities.

“(g) Special Restriction.—Upon request, the full range of alternative technologies, programs or processes deemed feasible to meet the resource recovery or resource conservation needs of a jurisdiction shall be described in such a manner as to provide a sufficient evaluative basis from which the jurisdiction can make its decisions, but no officer or employee of the Environmental Protection Agency shall, in an official capacity, lobby for or otherwise represent an agency position in favor of resource recovery or resource conservation, as a policy alternative for adoption into ordinances, codes,

regulations, or law by any State or political subdivision thereof.

"Full-Scale Demonstration Facilities

"Sec. 8004. (a) Authority.—The Administrator may enter into contracts with public agencies or authorities or private persons for the construction and operation of a full-scale demonstration facility under this Act, or provide financial assistance in the form of grants to a full-scale demonstration facility under this Act only if the Administrator finds that—

"(1) such facility or proposed facility will demonstrate at full scale a new or significantly improved technology or process, a practical and significant improvement in solid waste management practice, or the technological feasibility and cost effectiveness of an existing, but unproven technology, process, or practice, and will not duplicate any other Federal, State, local, or commercial facility which has been constructed or with respect to which construction has begun (determined as of the date action is taken by the Administrator under this Act),

"(2) such contract or assistance meets the requirements of section 8001 and meets other applicable requirements of the Act,

"(3) such facility will be able to comply with the guidelines published under section 1008 and with other laws and regulations for the protection of health and the environment,

"(4) in the case of a contract for construction or operation, such facility is not likely to be constructed or operated by State, local, or private persons or in the case of an application for financial assistance, such facility is not likely to receive adequate financial assistance from other sources, and

"(5) any Federal interest in, or assistance to, such facility will be disposed of or terminated, with appropriate compensation, within such period of time as may be necessary to carry out the basic objectives of this Act.

"(b) Time Limitation.—No obligation may be made by the Administrator for financial assistance under this subtitle for any full-scale demonstration facility after the date ten years after the enactment of this section. No expenditure of funds for any such full-scale demonstration facility under this subtitle may be made by the Administrator after the date fourteen years after such date of enactment.

"(c) Cost Sharing.—Wherever practicable, in constructing, operating, or providing financial assistance under this subtitle to a full-scale demonstration facility, the Administrator shall endeavor to enter into agreements and make other arrangements for maximum practicable cost sharing with other Federal, State, and local agencies, private persons, or any combination thereof.

"(2) The Administrator shall enter into arrangements, wherever practicable and desirable, to provide

monitoring of full-scale solid waste facilities (whether or not constructed or operated under this Act) for purposes of obtaining information concerning the performance, and other aspects, of such facilities. Where the Administrator provides only monitoring and evaluation instruments or personnel (or both) or funds for such instruments or personnel and provides no other financial assistance to a facility, notwithstanding section 8001(c)(3), title to any invention made or conceived of in the course of developing, constructing, or operating such facility shall not be required to vest in the United States and patents respecting such invention shall not be required to be issued to the United States.

"(d) Prohibition.—After the date of enactment of this section, the Administrator shall not construct or operate any full-scale facility (except by contract with public agencies or authorities or private persons).

"Special Study and Demonstration Projects on Recovery of Useful Energy and Materials

"Sec. 8005. (a) Studies.—The Administrator shall conduct studies and develop recommendations for administrative or legislative action on—

"(1) means of recovering materials and energy from solid waste, recommended uses of such materials and energy for national or international welfare, including identification of potential markets for such recovered resources, the impact of distribution of such resources on existing markets, and potentials for energy conservation through resource conservation and resource recovery;

"(2) actions to reduce waste generation which have been taken voluntarily or in response to governmental action, and those which practically could be taken in the future, and the economic, social, and environmental consequences of such actions;

"(3) methods of collection, separation, and containerization which will encourage efficient utilization of facilities and contribute to more effective programs of reduction, reuse, or disposal of wastes;

"(4) the use of Federal procurement to develop market demand for recovered resources;

"(5) recommended incentives (including Federal grants, loans, and other assistance) and disincentives to accelerate the reclamation or recycling of materials from solid wastes, with special emphasis on motor vehicle hulks;

"(6) the effect of existing public policies, including subsidies and economic incentives and disincentives, percentage depletion allowances, capital gains treatment and other tax incentives and disincentives, upon the recycling and reuse of materials, and the likely effect of the modification or elimination of such incentives and disincentives upon the reuse, recycling and conservation of such materials;

"(7) the necessity and method of imposing disposal or other charges on packaging, containers, vehicles, and

other manufactured goods, which charges would reflect the cost of final disposal, the value of recoverable components of the item, and any social costs associated with nonrecycling or uncontrolled disposal of such items; and

"(8) the legal constraints and institutional barriers to the acquisition of land needed for solid waste management, including land for facilities and disposal sites;

"(9) in consultation with the Secretary of Agriculture, agricultural waste management problems and practices, the extent of reuse and recovery of resources in such wastes, the prospects for improvement, Federal, State, and local regulations governing such practices, and the economic, social, and environmental consequences of such practices; and

"(10) in consultation with the Secretary of the Interior, mining waste management problems, and practices, including an assessment of existing authorities, technologies, and economics, and the environmental and public health consequences of such practices.

"(b) Demonstration.—The Administrator is also authorized to carry out demonstration projects to test and demonstrate methods and techniques developed pursuant to subsection (a).

"(c) Application of Other Sections.—Section 8001 (b) and (c) shall be applicable to investigations, studies, and projects carried out under this section.

"Grants for Resource Recovery Systems and Improved Solid Waste Disposal Facilities

"Sec. 8006. (a) Authority.—The Administrator is authorized to make grants pursuant to this section to any State, municipal, or interstate or intermunicipal agency for the demonstration of resource recovery systems or for the construction of new or improved solid waste disposal facilities.

"(b) Conditions.—(1) Any grant under this section for the demonstration of a resource recovery system may be made only if it (A) is consistent with any plans which meet the requirements of subtitle D of this Act; (B) is consistent with the guidelines recommended pursuant to section 1008 of this Act; (C) is designed to provide area-wide resource recovery systems consistent with the purposes of this Act, as determined by the Administrator, pursuant to regulations promulgated under subsection (d) of this section; and (D) provides an equitable system for distributing the costs associated with the construction, operation, and maintenance of any resource recovery system among the users of such system.

"(2) The Federal share for any project to which paragraph (1) applies shall not be more than 75 percent.

"(c) Limitations.—(1) A grant under this section for the construction of a new or improved solid waste disposal facility may be made only if—

"(A) a State or interstate plan for solid waste disposal has been adopted which applies to the area in-

volved, and the facility to be constructed (i) is consistent with such plan, (ii) is included in a comprehensive plan for the area involved which is satisfactory to the Administrator for the purpose of this Act, and (iii) is consistent with the guidelines recommended under section 1008, and

"(B) the project advances the state of the art by applying new and improved techniques in reducing the environmental impact of solid waste disposal, in achieving recovery of energy or resources, or in recycling useful materials.

"(2) The Federal share for any project to which paragraph (1) applies shall be not more than 50 percent in the case of a project serving an area which includes only one municipality, and not more than 75 percent in any other case.

"(d) Regulations.—(1) The Administrator shall promulgate regulations establishing a procedure for awarding grants under this section which—

"(A) provides that projects will be carried out in communities of varying sizes, under such conditions as will assist in solving the community waste problems of urban-industrial centers, metropolitan regions, and rural areas, under representative geographic and environmental conditions; and

"(B) provides deadlines for submission of, and action on, grant requests.

(2) In taking action on applications for grants under this section, consideration shall be given by the Administrator (A) to the public benefits to be derived by the construction and the propriety of Federal aid in making such grant; (B) to the extent applicable, to the economic and commercial viability of the project (including contractual arrangements with the private sector to market any resources recovered); (C) to the potential of such project for general application to community solid waste disposal problems; and (D) to the use by the applicant of comprehensive regional or metropolitan area planning.

"(e) Additional Limitations.—A grant under this section—

"(1) may be made only in the amount of the Federal share of (A) the estimated total design and construction costs, plus (B) in the case of a grant to which subsection (b)(1) applies, the first-year operation and maintenance costs;

"(2) may not be provided for land acquisition or (except as otherwise provided in paragraph (1) (B)) for operating or maintenance costs;

"(3) may not be made until the applicant has made provision satisfactory to the Administrator for proper and efficient operation and maintenance of the project (subject to paragraph (1)(B)); and

"(4) may be made subject to such conditions and requirements, in addition to those provided in this section, as the Administrator may require to properly carry out his functions pursuant to this Act.

For purposes of paragraph (1), the non-Federal share may be in any form, including, but not limited to, lands or interests therein needed for the project or personal property or services, the value of which shall be determined by the Administrator.

"(1) Single State.—(1) Not more than 15 percent of the total of funds authorized to be appropriated for any fiscal year to carry out this section shall be granted under this section for projects in any one State.

"(2) The Administrator shall prescribe by regulation the manner in which this subsection shall apply to a grant under this section for a project in an area which includes all or part of more than one State.

"Authorization of Appropriations

"Sec. 8007. There are authorized to be appropriated not to exceed \$35,000,000 for the fiscal year 1978 to carry out the purposes of this subtitle (except for section 8002)."

Solid Waste Cleanup on Federal Lands in Alaska

Sec. 3. [Repealed by PL 96-482]

Sec. 4. (a) In order to demonstrate effective means of dealing with contamination of public water supplies by leachate from abandoned or other landfills, the Administrator of the Environmental Protection Agency is authorized to provide technical and financial assistance for a research program to control leachate from the Llangollen Landfill in New Castle County, Delaware.

(b) The research program authorized by this section shall be designed by the New Castle County areawide waste treatment management program, in cooperation with the Environmental Protection Agency, to develop methods for controlling leachate contamination from abandoned and other landfills that may be applied at the Llangollen Landfill and at other landfills throughout the Nation. Such research program shall investigate all alternative solutions or corrective actions, including—

(1) hydrogeologic isolation of the landfill combined with the collection and treatment of leachate;

(2) excavation of the refuse, followed by some type of incineration;

(3) excavation and transportation of the refuse to another landfill; and

(4) collection and treatment of contaminated leachate or ground water.

Such research program shall consider the economic, social, and environmental consequences of each such alternative.

(c) The Administrator of the Environmental Protection Agency shall make available personnel of the Agency, including those of the Solid and Hazardous Waste Research Laboratory (Cincinnati, Ohio), and shall arrange for other Federal personnel to be made available, to provide technical assistance and aid in such research. The Administrator may provide up to \$250,000, of the

sums appropriated under the Solid Waste Disposal Act, to the New Castle County areawide waste treatment management program to conduct such research, including obtaining consultant services.

(d) In order to prevent further damage to public water supplies during the period of this study, the Administrator of the Environmental Protection Agency shall provide up to \$200,000 in each of fiscal years 1977 and 1978, of the sums appropriated under the Solid Waste Disposal Act for the operating costs of a counter-pumping program to contain the leachate from the Llangollen Landfill.

"Energy and Materials Conservation and Recovery

Sec. 32. (a) The Congress finds that—

(1) significant savings could be realized by conserving materials in order to reduce the volume or quantity of material which ultimately becomes waste;

(2) solid waste contains valuable energy and material resources which can be recovered and used thereby conserving increasingly scarce and expensive fossil fuels and virgin materials;

(3) the recovery of energy and materials from municipal waste, and the conservation of energy and materials contributing to such waste streams, can have the effect of reducing the volume of the municipal waste stream and the burden of disposing of increasing volumes of solid waste;

(4) the technology to conserve resources exists and is commercially feasible to apply;

(5) the technology to recover energy and materials from solid waste is of demonstrated commercial feasibility; and

(6) various communities throughout the nation have different needs and different potentials for conserving resources and for utilizing techniques for the recovery of energy and materials from waste, and Federal assistance in planning and implementing such energy and materials conservation and recovery programs should be available to all such communities on an equitable basis in relation to their needs and potential.

[Sections 32 and 33 added by PL 96-482]

National Advisory Commission on Resource Conservation and Recovery

Sec. 33. (a)(1) There is hereby established in the executive branch of the United States the National Advisory Commission on Resource Conservation and Recovery, hereinafter in this section referred to as the "Commission."

(2) The Commission shall be composed of nine members to be appointed by the President. Such members shall be qualified by reason of their education, training, or experience to represent the view of consumer groups, industry associations, and environmental and other groups concerned with resource conservation and recovery and at least two shall be elected or ap-

pointed State or local officials. Members shall be appointed for the life of the Commission.

(3) A vacancy in the Commission shall be filled in the manner in which the original appointment was made.

(4) Five members of the Commission shall constitute a quorum for transacting business of the Commission except that a lesser number may hold hearings and conduct information-gathering meetings.

(5) The Chairperson of the Commission shall be designated by the President from among the members.

(6) Upon the expiration of the two-year period beginning on (A) the date when all initial members of the Commission have been appointed or when (B) the date when initial funds become available to carry out this section, whichever is later, the Commission shall transmit to the President, and to each House of the Congress, a final report containing a detailed statement of the findings and conclusions of the Commission, together with such recommendations as it deems advisable.

(7) The Commission shall submit an interim report on February 15, 1982, and the Commission may also submit, for legislative and administrative actions relating to the Solid Waste Disposal Act, other interim reports prior to the submission of its final report.

(8) The Commission shall cease to exist 30 days after submission of its final report.

(b) The Commission shall—

(1) after consultation with the appropriate Federal agencies, review budgetary priorities relating to resource conservation and recovery, determine to what extent program goals relating to resource conservation and recovery are being realized, and make recommendations concerning the appropriate program balance and priorities;

(2) review any existing or proposed resource conservation and recovery guidelines or regulations;

(3) determine the economic development or savings potential of resource conservation and recovery, including the availability of markets for recovered energy and materials, for economic materials savings through conservation, and make recommendations concerning the utilization of such potential;

(4) identify, and make recommendations addressing, institutional obstacles impeding the development of resource conservation and resource recovery; and

(5) evaluate the status of resource conservation and recovery technology and systems including both materials and energy recovery technologies, recycling methods, and other innovative methods for both conserving energy and materials extractable from solid waste.

The review referred to in paragraph (1) should include but not be limited to an assessment of the effectiveness of the technical assistance panels, the public participation program and other program activities under the Solid Waste Disposal Act.

(c)(1) Members of the Commission while serving on business of the Commission, shall be compensated at a rate not to exceed the rate specified at the time of such service for grade GS-16 of the General Schedule for each day they are engaged in the actual performance of Commission duties, including travel time; and while so serving away from their homes or regular places of business, all members of the Commission may be allowed travel expenses, including per diem in lieu of subsistence, as authorized by section 5703 of title 5, United States Code, for persons in Government service employed intermittently.

(2) Subject to such rules as may be adopted by the Commission, the Chairperson, without regard to the provisions of title 5, United States Code, governing appointments in the competitive service and without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates, shall have the power to—

(A) appoint a Director, who shall be paid at a rate not to exceed the rate of basic pay for level I, GS-16 of the General Schedule; and

(B) appoint and fix the compensation of not more than 5 additional staff personnel.

(3) This Commission is authorized to procure temporary and intermittent services of experts and consultants as are necessary to the extent authorized by section 3109 of title 5, United States Code, but at rates not to exceed the rate specified at the time of such service for grade GS-16 in section 5332 of such title. Experts and consultants may be employed without compensation if they agree to do so in advance.

(4) Upon request of the Commission, the head of any Federal agency is authorized to detail on a reimbursable or nonreimbursable basis any of the personnel of such agency to the Commission to assist the Commission in carrying out its duties under this section.

(5) The Commission is exempt from the requirements of sections 4301 through 4308 of title 5, United States Code.

(6) The Commission is authorized to enter into contracts with Federal and State agencies, private firms, institutions, and individuals for the conduct of research or surveys, the preparation of reports, and other activities necessary to the discharge of its duties and responsibilities.

(7) In order to expedite matters pertaining to the planning for, and work of, the Commission, the Commission is authorized to make purchases and contracts without regard to section 252 of title 41 of the United States Code, pertaining to advertising and competitive bidding, and may arrange for the printing of any material pertaining to the work of the Commission without regard to the Government Printing and Binding Regulations and any related laws or regulations.

(8) The Commission may use the United States mail

in the same manner and under the same conditions as other departments and agencies of the United States.

(9) The Commission may secure directly from any department or agency of the United States information necessary to enable it to carry out its duties and functions. Upon request of the Chairperson, the head of any such Federal agency shall furnish such information to the Commission subject to applicable law.

(10) Financial and administrative services (including those related to budget and accounting, financial reporting, personnel, and procurement) shall be provided to the Commission by the General Services Administration for which payment shall be made in advance, or by reimbursement, from funds of the Commission, in such amounts as may be agreed upon by the Chairperson of the Commission and the Administrator of General Services.

(d) In carrying out its duties under this section the Commission, or any duly authorized committee thereof, is authorized to hold such hearings and take testimony, with respect to matters to which it has a responsibility under this section as the Commission may deem advisable. The Chairperson of the Commission or any member authorized by him may administer oaths or affirmations to witnesses appearing before the Commission or before any committee thereof.

(e) From the amounts authorized to be appropriated under the Solid Waste Disposal Act for the fiscal years 1981 and 1982, not more than \$1,000,000 may be used to carry out the provisions of this section.

Used Oil Recycling Act of 1980

[See editor's note at 71:3101]

Short Title

Section 1. This Act may be cited as the "Used Oil Recycling Act of 1980."

Findings

Sec. 2. The Congress finds and declares that—

(1) used oil is a valuable source of increasingly scarce energy and materials;

(2) technology exists to re-refine, reprocess, reclaim, and otherwise recycle used oil;

(3) used oil constitutes a threat to public health and the environment when reused or disposed of improperly; and
that, therefore, it is in the national interest to recycle used oil in a manner which does not constitute a threat to public health and the environment and which conserves energy and materials.

Sec. 4. (c) Before the effective date of the labeling standards required to be prescribed under section 383(d)(1)(A) of the Energy Policy and Conservation Act, no requirement of any rule or order of the Federal Trade Commission may apply, or remain applicable, to any container of recycled oil (as defined in section

383(b) of such Act) if such requirement provides that the container must bear any label referring to the fact that it has been derived from previously used oil. Nothing in this subsection shall be construed to affect any labeling requirement applicable to recycled oil under any authority of law to the extent such requirement relates to fitness for intended use or any other performance characteristic of such oil or to any characteristic of such oil other than that referred to in the preceding sentence.

Used Oil As a Hazardous Waste

"Sec. 8. Not later than ninety days after the date of the enactment of this Act, the Administrator of the Environmental Protection Agency shall—

(1) make a determination as to the applicability to used oil of the criteria and regulations promulgated under subsections (a) and (b) of section 3001 of the Solid Waste Disposal Act relating to characteristics of hazardous wastes, and

(2) report to the Congress the determination together with a detailed statement of the data and other information upon which the determination is based.

In making a determination under paragraph (1), the Administrator shall ensure that the recovery and reuse of used oil are not discouraged.

Study

Sec. 9. The Administrator of the Environmental Protection Agency, in cooperation with the Secretary of Energy, the Federal Trade Commission, and the Secretary of Commerce, shall conduct a study—

(1) assessing the environmental problems associated with the improper disposal or reuse of used oil;

(2) addressing the collection cycle of used oil prior to recycling;

(3) analyzing supply and demand in the used oil industry, including (A) estimates of the future supply and quality of used oil feedstocks for purpose of re-refining and (B) estimates of the future supply of virgin crude oil available for refining for purposes of producing lubricating oil;

(4) comparing the energy savings associated with re-refining used oil and the energy savings associated with other uses of used oil; and

(5) recommending Federal, State, and local policies to encourage methods for environmentally sound and economically feasible recycling of used oil.

Where appropriate, for purposes of the study under this section, the Administrator may utilize and update information and data previously collected by the Administrator and by other agencies, departments, and instrumentalities of the United States. The Administrator shall submit to Congress a report containing the results of the study under this section not later than one year after the date of the enactment of this Act.

**COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION,
AND LIABILITY ACT OF 1980**

"The Superfund"

(42 USC 9601, PL 96-510; Enacted by Congress December 3, 1980;

Signed by the President December 11, 1980)

**Public Law 96-510
96th Congress**

An Act

To provide for liability, compensation, cleanup, and emergency response for hazardous substances released into the environment and the cleanup of inactive hazardous waste disposal sites.

Dec. 11, 1980

[H.R. 7020]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Comprehensive Environmental Response, Compensation, and Liability Act of 1980".

Comprehensive
Environmental
Response,
Compensation,
and Liability Act
of 1980
42 USC 9601
note.

**TITLE I—HAZARDOUS SUBSTANCES RELEASES, LIABILITY,
COMPENSATION**

DEFINITIONS

SEC. 101. For purpose of this title, the term—

42 USC 9601.

(1) "act of God" means an unanticipated grave natural disaster or other natural phenomenon of an exceptional, inevitable, and irresistible character, the effects of which could not have been prevented or avoided by the exercise of due care or foresight;

(2) "Administrator" means the Administrator of the United States Environmental Protection Agency;

(3) "barrel" means forty-two United States gallons at sixty degrees Fahrenheit;

(4) "claim" means a demand in writing for a sum certain;

(5) "claimant" means any person who presents a claim for compensation under this Act;

(6) "damages" means damages for injury or loss of natural resources as set forth in section 107(a) or 111(b) of this Act;

(7) "drinking water supply" means any raw or finished water source that is or may be used by a public water system (as defined in the Safe Drinking Water Act) or as drinking water by one or more individuals;

42 USC 201 note.

(8) "environment" means (A) the navigable waters, the waters of the contiguous zone, and the ocean waters of which the natural resources are under the exclusive management authority of the United States under the Fishery Conservation and Management Act of 1976, and (B) any other surface water, ground water, drinking water supply, land surface or subsurface strata, or ambient air within the United States or under the jurisdiction of the United States;

16 USC 1801
note.

(9) "facility" means (A) any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft, or (B) any site or area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any vessel;

(10) "federally permitted release" means (A) discharges in compliance with a permit under section 402 of the Federal Water Pollution Control Act, (B) discharges resulting from circumstances identified and reviewed and made part of the public record with respect to a permit issued or modified under section 402 of the Federal Water Pollution Control Act and subject to a condition of such permit, (C) continuous or anticipated intermittent discharges from a point source, identified in a permit or

33 USC 1342.

- permit application under section 402 of the Federal Water Pollution Control Act, which are caused by events occurring within the scope of relevant operating or treatment systems, (D) discharges in compliance with a legally enforceable permit under section 404 of the Federal Water Pollution Control Act, (E) releases in compliance with a legally enforceable final permit issued pursuant to section 3005 (a) through (d) of the Solid Waste Disposal Act from a hazardous waste treatment, storage, or disposal facility when such permit specifically identifies the hazardous substances and makes such substances subject to a standard of practice, control procedure or bioassay limitation or condition, or other control on the hazardous substances in such releases, (F) any release in compliance with a legally enforceable permit issued under section 102 of section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972, (G) any injection of fluids authorized under Federal underground injection control programs or State programs submitted for Federal approval (and not disapproved by the Administrator of the Environmental Protection Agency) pursuant to part C of the Safe Drinking Water Act, (H) any emission into the air subject to a permit or control regulation under section 111, section 112, title I part C, title I part D, or State implementation plans submitted in accordance with section 110 of the Clean Air Act (and not disapproved by the Administrator of the Environmental Protection Agency), including any schedule or waiver granted, promulgated, or approved under these sections, (I) any injection of fluids or other materials authorized under applicable State law (i) for the purpose of stimulating or treating wells for the production of crude oil, natural gas, or water, (ii) for the purpose of secondary, tertiary, or other enhanced recovery of crude oil or natural gas, or (iii) which are brought to the surface in conjunction with the production of crude oil or natural gas and which are reinjected, (J) the introduction of any pollutant into a publicly owned treatment works when such pollutant is specified in and in compliance with applicable pretreatment standards of section 307 (b) or (c) of the Clean Water Act and enforceable requirements in a pretreatment program submitted by a State or municipality for Federal approval under section 402 of such Act, and (K) any release of source, special nuclear, or byproduct material, as those terms are defined in the Atomic Energy Act of 1954, in compliance with a legally enforceable license, permit, regulation, or order issued pursuant to the Atomic Energy Act of 1954;
- (11) "Fund" or "Trust Fund" means the Hazardous Substance Response Fund established by section 221 of this Act or, in the case of a hazardous waste disposal facility for which liability has been transferred under section 107(k) of this Act, the Post-closure Liability Fund established by section 232 of this Act;
- (12) "ground water" means water in a saturated zone or stratum beneath the surface of land or water;
- (13) "guarantor" means any person, other than the owner or operator, who provides evidence of financial responsibility for an owner or operator under this Act;
- (14) "hazardous substance" means (A) any substance designated pursuant to section 311(b)(2)(A) of the Federal Water Pollution Control Act, (B) any element, compound, mixture, solution, or substance designated pursuant to section 102 of this Act, (C) any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Solid Waste Disposal Act (but not including any waste the regulation of which under the Solid Waste Disposal Act has been suspended by Act of Congress), (D) any toxic pollutant listed under section 307(a) of the Federal Water Pollution Control Act, (E) any hazardous air pollutant listed under section 112 of the Clean Air Act, and (F) any imminently hazardous chemical substance or mixture with respect to which the Administrator has taken action pursuant to section 7 of the Toxic Substances Control Act. The term does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance under subparagraphs (A) through (F) of this
- 33 USC 1344.
- 42 USC 6925.
- 33 USC 1412, 1413.
- 42 USC 300.
- 42 USC 7411, 7412, 7470, 7501.
- 42 USC 7410.
- 33 USC 1317.
- 33 USC 1342.
- 42 USC 2014.
- Post, p. 2801.
- Post, p. 2801.
- 33 USC 1321.
- 42 USC 6921.
- 42 USC 7412.
- 15 USC 2606.

paragraph, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas);

(15) "navigable waters" or "navigable waters of the United States" means the waters of the United States, including the territorial seas;

(16) "natural resources" means land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States (including the resources of the fishery conservation zone established by the Fishery Conservation and Management Act of 1976), any State or local government, or any foreign government;

16 USC 1801
note

(17) "offshore facility" means any facility of any kind located in, on, or under, any of the navigable waters of the United States, and any facility of any kind which is subject to the jurisdiction of the United States and is located in, on, or under any other waters, other than a vessel or a public vessel;

(18) "onshore facility" means any facility (including, but not limited to, motor vehicles and rolling stock) of any kind located in, on, or under, any land or nonnavigable waters within the United States;

(19) "otherwise subject to the jurisdiction of the United States" means subject to the jurisdiction of the United States by virtue of United States citizenship, United States vessel documentation or numbering, or as provided by international agreement to which the United States is a party;

(20)(A) "owner or operator" means (i) in the case of a vessel, any person owning, operating, or chartering by demise, such vessel, (ii) in the case of an onshore facility or an offshore facility, any person owning or operating such facility, and (iii) in the case of any abandoned facility, any person who owned, operated, or otherwise controlled activities at such facility immediately prior to such abandonment. Such term does not include a person, who, without participating in the management of a vessel or facility, holds indicia of ownership primarily to protect his security interest in the vessel or facility;

(B) in the case of a hazardous substance which has been accepted for transportation by a common or contract carrier and except as provided in section 107(a) (3) or (4) of this Act, (i) the term "owner or operator" shall mean such common carrier or other bona fide for hire carrier acting as an independent contractor during such transportation, (ii) the shipper of such hazardous substance shall not be considered to have caused or contributed to any release during such transportation which resulted solely from circumstances or conditions beyond his control;

(C) in the case of a hazardous substance which has been delivered by a common or contract carrier to a disposal or treatment facility and except as provided in section 107(a) (3) or (4) (i) the term "owner or operator" shall not include such common or contract carrier, and (ii) such common or contract carrier shall not be considered to have caused or contributed to any release at such disposal or treatment facility resulting from circumstances or conditions beyond its control;

(21) "person" means an individual, firm, corporation, association, partnership, consortium, joint venture, commercial entity, United States Government, State, municipality, commission, political subdivision of a State, or any interstate body;

(22) "release" means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, but excludes (A) any release which results in exposure to persons solely within a workplace, with respect to a claim which such persons may assert against the employer of such persons, (B) emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine, (C) release of source, byproduct, or special nuclear material from a nuclear incident, as those terms are defined in the Atomic Energy Act of 1954, if such release is subject to requirements with respect to financial

42 USC 2011
note

42 USC 2210.

42 USC 7912,
7942.

42 USC 5121
note.

protection established by the Nuclear Regulatory Commission under section 170 of such Act, or, for the purposes of section 104 of this title or any other response action, any release of source byproduct, or special nuclear material from any processing site designated under section 102(a)(1) or 302(a) of the Uranium Mill Tailings Radiation Control Act of 1978, and (D) the normal application of fertilizer;

(23) "remove" or "removal" means the cleanup or removal of released hazardous substances from the environment, such actions as may be necessary taken in the event of the threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release. The term includes, in addition, without being limited to, security fencing or other measures to limit access, provision of alternative water supplies, temporary evacuation and housing of threatened individuals not otherwise provided for, action taken under section 104(b) of this Act, and any emergency assistance which may be provided under the Disaster Relief Act of 1974;

(24) "remedy" or "remedial action" means those actions consistent with proper remedy taken instead of or in addition to removal actions to prevent a release or threatened release of a hazardous substance into the environment, to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health or welfare or the environment. The term includes, but is not limited to, such actions at the location of the release as storage, confinement, perimeter protection using dikes, trenches, or ditches, clay cover, neutralization, cleanup of released hazardous substances or contaminated materials, recycling or reuse, diversion, destruction, segregation of reactive wastes, dredging or excavations, repair or replacement of leaking containers, collection of leachate and runoff, onsite treatment or incineration, provision of alternative water supplies, and any monitoring reasonably required to assure that such actions protect the public health and welfare and the environment. The term includes the costs of permanent relocation of residents and businesses and community facilities where the President determines that, alone or in combination with other measures, such relocation is more cost-effective than and environmentally preferable to the transportation, storage, treatment, destruction, or secure disposition offsite of hazardous substances, or may otherwise be necessary to protect the public health or welfare. The term does not include offsite transport of hazardous substances, or the storage, treatment, destruction, or secure disposition offsite of such hazardous substances or contaminated materials unless the President determines that such actions (A) are more cost-effective than other remedial actions, (B) will create new capacity to manage, in compliance with subtitle C of the Solid Waste Disposal Act, hazardous substances in addition to those located at the affected facility, or (C) are necessary to protect public health or welfare or the environment from a present or potential risk which may be created by further exposure to the continued presence of such substances or materials;

(25) "respond" or "response" means remove, removal, remedy, and remedial action;

(26) "transport" or "transportation" means the movement of a hazardous substance by any mode, including pipeline (as defined in the Pipeline Safety Act), and in the case of a hazardous substance which has been accepted for transportation by a common or contract carrier, the term "transport" or "transportation" shall include any stoppage in transit which is temporary, incidental to the transportation movement, and at the ordinary operating convenience of a common or contract carrier, and any

49 USC 1671
note.

such stoppage shall be considered as a continuity of movement and not as the storage of a hazardous substance;

(27) "United States" and "State" include the several States of the United States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the United States Virgin Islands, the Commonwealth of the Northern Marianas, and any other territory or possession over which the United States has jurisdiction;

(28) "vessel" means every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water;

(29) "disposal", "hazardous waste", and "treatment" shall have the meaning provided in section 1004 of the Solid Waste Disposal Act;

42 USC 6903.

(30) "territorial sea" and "contiguous zone" shall have the meaning provided in section 502 of the Federal Water Pollution Control Act.

33 USC 1362.

(31) "national contingency plan" means the national contingency plan published under section 311(c) of the Federal Water Pollution Control Act or revised pursuant to section 105 of this Act; and

33 USC 1321.

(32) "liable" or "liability" under this title shall be construed to be the standard of liability which obtains under section 311 of the Federal Water Pollution Control Act.

REPORTABLE QUANTITIES AND ADDITIONAL DESIGNATIONS

Sec. 102. (a) The Administrator shall promulgate and revise as may be appropriate, regulations designating as hazardous substances, in addition to those referred to in section 101(14) of this title, such elements, compounds, mixtures, solutions, and substances which, when released into the environment may present substantial danger to the public health or welfare or the environment, and shall promulgate regulations establishing that quantity of any hazardous substance the release of which shall be reported pursuant to section 103 of this title. The Administrator may determine that one single quantity shall be the reportable quantity for any hazardous substance, regardless of the medium into which the hazardous substance is released.

Regulations.
42 USC 9602

(b) Unless and until superseded by regulations establishing a reportable quantity under subsection (a) of this section for any hazardous substance as defined in section 101(14) of this title, (1) a quantity of one pound, or (2) for those hazardous substances for which reportable quantities have been established pursuant to section 311(b)(4) of the Federal Water Pollution Control Act, such reportable quantity, shall be deemed that quantity, the release of which requires notification pursuant to section 103 (a) or (b) of this title.

33 USC 1321

NOTICES, PENALTIES

Sec. 103. (a) Any person in charge of a vessel or an offshore or an onshore facility shall, as soon as he has knowledge of any release (other than a federally permitted release) of a hazardous substance from such vessel or facility in quantities equal to or greater than those determined pursuant to section 102 of this title, immediately notify the National Response Center established under the Clean Water Act of such release. The National Response Center shall convey the notification expeditiously to all appropriate Government agencies, including the Governor of any affected State.

42 USC 9603.

33 USC 1251
9906

(b) Any person—

(1) in charge of a vessel from which a hazardous substance is released, other than a federally permitted release, into or upon the navigable waters of the United States, adjoining shorelines, or into or upon the waters of the contiguous zone, or

(2) in charge of a vessel from which a hazardous substance is released, other than a federally permitted release, which may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States (including resources under the Fishery Conservation and Man-

16 USC 1801
note.

agement Act of 1976), and who is otherwise subject to the jurisdiction of the United States at the time of the release, or

(3) in charge of a facility from which a hazardous substance is released, other than a federally permitted release, in a quantity equal to or greater than that determined pursuant to section 102 of this title who fails to notify immediately the appropriate agency of the United States Government as soon as he has knowledge of such release shall, upon conviction, be fined not more than \$10,000 or imprisoned for not more than one year, or both. Notification received pursuant to this paragraph or information obtained by the exploitation of such notification shall not be used against any such person in any criminal case, except a prosecution for perjury or for giving a false statement.

42 USC 6921

(c) Within one hundred and eighty days after the enactment of this Act, any person who owns or operates or who at the time of disposal owned or operated, or who accepted hazardous substances for transport and selected, a facility at which hazardous substances (as defined in section 101(14)(C) of this title) are or have been stored, treated, or disposed of shall, unless such facility has a permit issued under, or has been accorded interim status under, subtitle C of the Solid Waste Disposal Act, notify the Administrator of the Environmental Protection Agency of the existence of such facility, specifying the amount and type of any hazardous substance to be found there, and any known, suspected, or likely releases of such substances from such facility. The Administrator may prescribe in greater detail the manner and form of the notice and the information included. The Administrator shall notify the affected State agency, or any department designated by the Governor to receive such notice, of the existence of such facility. Any person who knowingly fails to notify the Administrator of the existence of any such facility shall, upon conviction, be fined not more than \$10,000, or imprisoned for not more than one year, or both. In addition, any such person who knowingly fails to provide the notice required by this subsection shall not be entitled to any limitation of liability or to any defenses to liability set out in section 107 of this Act: *Provided, however,* That notification under this subsection is not required for any facility which would be reportable hereunder solely as a result of any stoppage in transit which is temporary, incidental to the transportation movement, or at the ordinary operating convenience of a common or contract carrier, and such stoppage shall be considered as a continuity of movement and not as the storage of a hazardous substance. Notification received pursuant to this subsection or information obtained by the exploitation of such notification shall not be used against any such person in any criminal case, except a prosecution for perjury or for giving a false statement.

Rules and
regulations.

(d)(1) The Administrator of the Environmental Protection Agency is authorized to promulgate rules and regulations specifying, with respect to—

(A) the location, title, or condition of a facility, and

(B) the identity, characteristics, quantity, origin, or condition (including containerization and previous treatment) of any hazardous substances contained or deposited in a facility;

the records which shall be retained by any person required to provide the notification of a facility set out in subsection (c) of this section. Such specification shall be in accordance with the provisions of this subsection.

(2) Beginning with the date of enactment of this Act, for fifty years thereafter or for fifty years after the date of establishment of a record (whichever is later), or at any such earlier time as a waiver if obtained under paragraph (3) of this subsection, it shall be unlawful for any such person knowingly to destroy, mutilate, erase, dispose of, conceal, or otherwise render unavailable or unreadable or falsify any records identified in paragraph (1) of this subsection. Any person who violates this paragraph shall, upon conviction, be fined not more than \$20,000, or imprisoned for not more than one year, or both.

(3) At any time prior to the date which occurs fifty years after the date of enactment of this Act, any person identified under paragraph (1) of this subsection may apply to the Administrator of the Environmental Protection Agency for a waiver of the provisions of the first sentence of paragraph (2) of this subsection. The Administrator is

authorized to grant such waiver if, in his discretion, such waiver would not unreasonably interfere with the attainment of the purposes and provisions of this Act. The Administrator shall promulgate rules and regulations regarding such a waiver so as to inform parties of the proper application procedure and conditions for approval of such a waiver.

Rules and
regulations.

(4) Notwithstanding the provisions of this subsection, the Administrator of the Environmental Protection Agency may in his discretion require any such person to retain any record identified pursuant to paragraph (1) of this subsection for such a time period in excess of the period specified in paragraph (2) of this subsection as the Administrator determines to be necessary to protect the public health or welfare.

(e) This section shall not apply to the application of a pesticide product registered under the Federal Insecticide, Fungicide, and Rodenticide Act or to the handling and storage of such a pesticide product by an agricultural producer.

7 USC 136 note.

(f) No notification shall be required under subsection (a) or (b) of this section for any release of a hazardous substance—

(1) which is required to be reported (or specifically exempted from a requirement for reporting) under subtitle C of the Solid Waste Disposal Act or regulations thereunder and which has been reported to the National Response Center, or

(2) which is a continuous release, stable in quantity and rate, and is—

(A) from a facility for which notification has been given under subsection (c) of this section, or

(B) a release of which notification has been given under subsections (a) and (b) of this section for a period sufficient to establish the continuity, quantity, and regularity of such release:

Provided, That notification in accordance with subsections (a) and (b) of this paragraph shall be given for releases subject to this paragraph annually, or at such time as there is any statistically significant increase in the quantity of any hazardous substance or constituent thereof released, above that previously reported or occurring.

RESPONSE AUTHORITIES

SEC. 104. (a)(1) Whenever (A) any hazardous substance is released or there is a substantial threat of such a release into the environment, or (B) there is a release or substantial threat of release into the environment of any pollutant or contaminant which may present an imminent and substantial danger to the public health or welfare, the President is authorized to act, consistent with the national contingency plan, to remove or arrange for the removal of, and provide for remedial action relating to such hazardous substance, pollutant, or contaminant at any time (including its removal from any contaminated natural resource), or take any other response measure consistent with the national contingency plan which the President deems necessary to protect the public health or welfare or the environment, unless the President determines that such removal and remedial action will be done properly by the owner or operator of the vessel or facility from which the release or threat of release emanates, or by any other responsible party.

42 USC 9604.

(2) For the purposes of this section, "pollutant or contaminant" shall include, but not be limited to, any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring. The term does not include petroleum, including crude oil and any fraction thereof which is not otherwise specifically listed or designated as hazardous substances under section 101(14) (A) through (F) of this title, nor does it include natural gas, liquefied natural gas, or synthetic gas of pipeline quality (or mixtures of natural gas and such synthetic gas).

"Pollutant or
contaminant."

(b) Whenever the President is authorized to act pursuant to subsection (a) of this section, or whenever the President has reason to

believe that a release has occurred or is about to occur, or that illness, disease, or complaints thereof may be attributable to exposure to a hazardous substance, pollutant, or contaminant and that a release may have occurred or be occurring, he may undertake such investigations, monitoring, surveys, testing, and other information gathering as he may deem necessary or appropriate to identify the existence and extent of the release or threat thereof, the source and nature of the hazardous substances, pollutants or contaminants involved, and the extent of danger to the public health or welfare or to the environment. In addition, the President may undertake such planning, legal, fiscal, economic, engineering, architectural, and other studies or investigations as he may deem necessary or appropriate to plan and direct response actions, to recover the costs thereof, and to enforce the provisions of this Act.

(c)(1) Unless (A) the President finds that (i) continued response actions are immediately required to prevent, limit, or mitigate an emergency, (ii) there is an immediate risk to public health or welfare or the environment, and (iii) such assistance will not otherwise be provided on a timely basis, or (B) the President has determined the appropriate remedial actions pursuant to paragraph (2) of this subsection and the State or States in which the source of the release is located have complied with the requirements of paragraph (3) of this subsection, obligations from the Fund, other than those authorized by subsection (b) of this section, shall not continue after \$1,000,000 has been obligated for response actions or six months has elapsed from the date of initial response to a release or threatened release of hazardous substances.

(2) The President shall consult with the affected State or States before determining any appropriate remedial action to be taken pursuant to the authority granted under subsection (a) of this section.

(3) The President shall not provide any remedial actions pursuant to this section unless the State in which the release occurs first enters into a contract or cooperative agreement with the President providing assurances deemed adequate by the President that (A) the State will assure all future maintenance of the removal and remedial actions provided for the expected life of such actions as determined by the President; (B) the State will assure the availability of a hazardous waste disposal facility acceptable to the President and in compliance with the requirements of subtitle C of the Solid Waste Disposal Act for any necessary offsite storage, destruction, treatment, or secure disposition of the hazardous substances; and (C) the State will pay or assure payment of (i) 10 per centum of the costs of the remedial action, including all future maintenance, or (ii) at least 50 per centum or such greater amount as the President may determine appropriate, taking into account the degree of responsibility of the State or political subdivision, of any sums expended in response to a release at a facility that was owned at the time of any disposal of hazardous substances therein by the State or a political subdivision thereof. The President shall grant the State a credit against the share of the costs for which it is responsible under this paragraph for any documented direct out-of-pocket non-Federal funds expended or obligated by the State or a political subdivision thereof after January 1, 1978, and before the date of enactment of this Act for cost-eligible response actions and claims for damages compensable under section 111 of this title relating to the specific release in question: *Provided, however,* That in no event shall the amount of the credit granted exceed the total response costs relating to the release.

(4) The President shall select appropriate remedial actions determined to be necessary to carry out this section which are to the extent practicable in accordance with the national contingency plan and which provide for that cost-effective response which provides a balance between the need for protection of public health and welfare and the environment at the facility under consideration, and the availability of amounts from the Fund established under title II of this Act to respond to other sites which present or may present a threat to public health or welfare or the environment, taking into consideration the need for immediate action.

(d)(1) Where the President determines that a State or political subdivision thereof has the capability to carry out any or all of the actions authorized in this section, the President may, in his discretion, enter into a contract or cooperative agreement with such State

or political subdivision to take such actions in accordance with criteria and priorities established pursuant to section 105(8) of this title and to be reimbursed for the reasonable response costs thereof from the Fund. Any contract made hereunder shall be subject to the cost-sharing provisions of subsection (c) of this section.

(2) If the President enters into a cost-sharing agreement pursuant to subsection (c) of this section or a contract or cooperative agreement pursuant to this subsection, and the State or political subdivision thereof fails to comply with any requirements of the contract, the President may, after providing sixty days notice, seek in the appropriate Federal district court to enforce the contract or to recover any funds advanced or any costs incurred because of the breach of the contract by the State or political subdivision.

(3) Where a State or a political subdivision thereof is acting in behalf of the President, the President is authorized to provide technical and legal assistance in the administration and enforcement of any contract or subcontract in connection with response actions assisted under this title, and to intervene in any civil action involving the enforcement of such contract or subcontract.

(4) Where two or more noncontiguous facilities are reasonably related on the basis of geography, or on the basis of the threat, or potential threat to the public health or welfare or the environment, the President may, in his discretion, treat these related facilities as one for purposes of this section.

(e)(1) For purposes of assisting in determining the need for response to a release under this title or enforcing the provisions of this title, any person who stores, treats, or disposes of, or, where necessary to ascertain facts not available at the facility where such hazardous substances are located, who generates, transports, or otherwise handles or has handled, hazardous substances shall, upon request of any officer, employee, or representative of the President, duly designated by the President, or upon request of any duly designated officer, employee, or representative of a State, where appropriate, furnish information relating to such substances and permit such person at all reasonable times to have access to, and to copy all records relating to such substances. For the purposes specified in the preceding sentence, such officers, employees, or representatives are authorized—

(A) to enter at reasonable times any establishment or other place where such hazardous substances are or have been generated, stored, treated, or disposed of, or transported from;

(B) to inspect and obtain samples from any person of any such substance and samples of any containers or labeling for such substances. Each such inspection shall be commenced and completed with reasonable promptness. If the officer, employee, or representative obtains any samples, prior to leaving the premises, he shall give to the owner, operator, or person in charge a receipt describing the sample obtained and if requested a portion of each such sample equal in volume or weight to the portion retained. If any analysis is made of such samples, a copy of the results of such analysis shall be furnished promptly to the owner, operator, or person in charge.

(2)(A) Any records, reports, or information obtained from any person under this section (including records, reports, or information obtained by representatives of the President) shall be available to the public, except that upon a showing satisfactory to the President (or the State, as the case may be) by any person that records, reports, or information, or particular part thereof (other than health or safety effects data), to which the President (or the State, as the case may be) or any officer, employee, or representative has access under this section if made public would divulge information entitled to protection under section 1905 of title 18 of the United States Code, such information or particular portion thereof shall be considered confidential in accordance with the purposes of that section, except that such record, report, document or information may be disclosed to other officers, employees, or authorized representatives of the United States concerned with carrying out this Act, or when relevant in any proceeding under this Act.

(B) Any person not subject to the provisions of section 1905 of title 18 of the United States Code who knowingly and willfully divulges or discloses any information entitled to protection under this subsection

shall, upon conviction, be subject to a fine of not more than \$5,000 or to imprisonment not to exceed one year, or both.

(C) In submitting data under this Act, a person required to provide such data may (i) designate the data which such person believes is entitled to protection under this subsection and (ii) submit such designated data separately from other data submitted under this Act. A designation under this paragraph shall be made in writing and in such manner as the President may prescribe by regulation.

(D) Notwithstanding any limitation contained in this section or any other provision of law, all information reported to or otherwise obtained by the President (or any representative of the President) under this Act shall be made available, upon written request of any duly authorized committee of the Congress, to such committee.

(f) In awarding contracts to any person engaged in response actions, the President or the State, in any case where it is awarding contracts pursuant to a contract entered into under subsection (d) of this section, shall require compliance with Federal health and safety standards established under section 301(f) of this Act by contractors and subcontractors as a condition of such contracts.

(g)(1) All laborers and mechanics employed by contractors or subcontractors in the performance of construction, repair, or alteration work funded in whole or in part under this section shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with the Davis-Bacon Act. The President shall not approve any such funding without first obtaining adequate assurance that required labor standards will be maintained upon the construction work.

(2) The Secretary of Labor shall have, with respect to the labor standards specified in paragraph (1), the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (15 F.R. 3176; 64 Stat. 1267) and section 276c of title 40 of the United States Code.

(h) Notwithstanding any other provision of law, subject to the provisions of section 111 of this Act, the President may authorize the use of such emergency procurement powers as he deems necessary to effect the purpose of this Act. Upon determination that such procedures are necessary, the President shall promulgate regulations prescribing the circumstances under which such authority shall be used and the procedures governing the use of such authority.

(i) There is hereby established within the Public Health Service an agency, to be known as the Agency for Toxic Substances and Disease Registry, which shall report directly to the Surgeon General of the United States. The Administrator of said Agency shall, with the cooperation of the Administrator of the Environmental Protection Agency, the Commissioner of the Food and Drug Administration, the Directors of the National Institute of Medicine, National Institute of Environmental Health Sciences, National Institute of Occupational Safety and Health, Centers for Disease Control, the Administrator of the Occupational Safety and Health Administration, and the Administrator of the Social Security Administration, effectuate and implement the health related authorities of this Act. In addition, said Administrator shall—

(1) in cooperation with the States, establish and maintain a national registry of serious diseases and illnesses and a national registry of persons exposed to toxic substances;

(2) establish and maintain inventory of literature, research, and studies on the health effects of toxic substances;

(3) in cooperation with the States, and other agencies of the Federal Government, establish and maintain a complete listing of areas closed to the public or otherwise restricted in use because of toxic substance contamination;

(4) in cases of public health emergencies caused or believed to be caused by exposure to toxic substances, provide medical care and testing to exposed individuals, including but not limited to tissue sampling, chromosomal testing, epidemiological studies, or any other assistance appropriate under the circumstances; and

(5) either independently or as part of other health status survey, conduct periodic survey and screening programs to

Post, p. 2805.

40 USC 276a
note.

5 USC app.

Agency for Toxic
Substances and
Disease Registry
Establishment.

determine relationships between exposure to toxic substances and illness. In cases of public health emergencies, exposed persons shall be eligible for admission to hospitals and other facilities and services operated or provided by the Public Health Service.

NATIONAL CONTINGENCY PLAN

SEC. 105. Within one hundred and eighty days after the enactment of this Act, the President shall, after notice and opportunity for public comments, revise and republish the national contingency plan for the removal of oil and hazardous substances, originally prepared and published pursuant to section 311 of the Federal Water Pollution Control Act, to reflect and effectuate the responsibilities and powers created by this Act, in addition to those matters specified in section 311(c)(2). Such revision shall include a section of the plan to be known as the national hazardous substance response plan which shall establish procedures and standards for responding to releases of hazardous substances, pollutants, and contaminants, which shall include at a minimum

42 USC 9605.

33 USC 1321

(1) methods for discovering and investigating facilities at which hazardous substances have been disposed of or otherwise come to be located;

(2) methods for evaluating, including analyses of relative cost, and remedying any releases or threats of releases from facilities which pose substantial danger to the public health or the environment;

(3) methods and criteria for determining the appropriate extent of removal, remedy, and other measures authorized by this Act;

(4) appropriate roles and responsibilities for the Federal, State, and local governments and for interstate and nongovernmental entities in effectuating the plan;

(5) provision for identification, procurement, maintenance, and storage of response equipment and supplies;

(6) a method for and assignment of responsibility for reporting the existence of such facilities which may be located on federally owned or controlled properties and any releases of hazardous substances from such facilities;

(7) means of assuring that remedial action measures are cost-effective over the period of potential exposure to the hazardous substances or contaminated materials;

(8)(A) criteria for determining priorities among releases or threatened releases throughout the United States for the purpose of taking remedial action and, to the extent practicable taking into account the potential urgency of such action, for the purpose of taking removal action. Criteria and priorities under this paragraph shall be based upon relative risk or danger to public health or welfare or the environment, in the judgment of the President, taking into account to the extent possible the population at risk, the hazard potential of the hazardous substances at such facilities, the potential for contamination of drinking water supplies, the potential for direct human contact, the potential for destruction of sensitive ecosystems, State preparedness to assume State costs and responsibilities, and other appropriate factors.

(B) based upon the criteria set forth in subparagraph (A) of this paragraph, the President shall list as part of the plan national priorities among the known releases or threatened releases throughout the United States and shall revise the list no less often than annually. Within one year after the date of enactment of this Act, and annually thereafter, each State shall establish and submit for consideration by the President priorities for remedial action among known releases and potential releases in that State based upon the criteria set forth in subparagraph (A) of this paragraph. In assembling or revising the national list, the President shall consider any priorities established by the States. To the extent practicable, at least four hundred of the highest priority facilities shall be designated individually and shall be referred to as the "top priority among known response targets", and, to the extent practicable, shall include among the one hundred highest priority facilities at least one such facility from

each State which shall be the facility designated by the State as presenting the greatest danger to public health or welfare or the environment among the known facilities in such State. Other priority facilities or incidents may be listed singly or grouped for response priority purposes; and

(9) specified roles for private organizations and entities in preparation for response and in responding to releases of hazardous substances, including identification of appropriate qualifications and capacity therefor.

The plan shall specify procedures, techniques, materials, equipment, and methods to be employed in identifying, removing, or remedying releases of hazardous substances comparable to those required under section 311(c)(2) (F) and (G) and (j)(1) of the Federal Water Pollution Control Act. Following publication of the revised national contingency plan, the response to and actions to minimize damage from hazardous substances releases shall, to the greatest extent possible, be in accordance with the provisions of the plan. The President may, from time to time, revise and republish the national contingency plan.

33 USC 1321.

Revision and
Republication.

ABATEMENT ACTION

42 USC 9606.

SEC. 106. (a) In addition to any other action taken by a State or local government, when the President determines that there may be an imminent and substantial endangerment to the public health or welfare or the environment because of an actual or threatened release of a hazardous substance from a facility, he may require the Attorney General of the United States to secure such relief as may be necessary to abate such danger or threat, and the district court of the United States in the district in which the threat occurs shall have jurisdiction to grant such relief as the public interest and the equities of the case may require. The President may also, after notice to the affected State, take other action under this section including, but not limited to, issuing such orders as may be necessary to protect public health and welfare and the environment.

Notice.

(b) Any person who willfully violates, or fails or refuses to comply with, any order of the President under subsection (a) may, in an action brought in the appropriate United States district court to enforce such order, be fined not more than \$5,000 for each day in which such violation occurs or such failure to comply continues.

Guidelines

(c) Within one hundred and eighty days after enactment of this Act, the Administrator of the Environmental Protection Agency shall, after consultation with the Attorney General, establish and publish guidelines for using the imminent hazard, enforcement, and emergency response authorities of this section and other existing statutes administered by the Administrator of the Environmental Protection Agency to effectuate the responsibilities and powers created by this Act. Such guidelines shall to the extent practicable be consistent with the national hazardous substance response plan, and shall include, at a minimum, the assignment of responsibility for coordinating response actions with the issuance of administrative orders, enforcement of standards and permits, the gathering of information, and other imminent hazard and emergency powers authorized by (1) sections 311(c)(2), 308, 309, and 504(a) of the Federal Water Pollution Control Act, (2) sections 3007, 3008, 3013, and 7003 of the Solid Waste Disposal Act, (3) sections 1445 and 1431 of the Safe Drinking Water Act, (4) sections 113, 114, and 303 of the Clean Air Act, and (5) section 7 of the Toxic Substances Control Act.

33 USC 1321,
1318, 1319, 1364
42 USC 6927,
6928; *Ante*, p
2344; 42 USC
6973.
42 USC 300j-1,
300i.
42 USC 7113,
7414, 7603.
15 USC 2606
42 USC 9607

LIABILITY

SEC. 107. (a) Notwithstanding any other provision or rule of law, and subject only to the defenses set forth in subsection (b) of this section—

(1) the owner and operator of a vessel (otherwise subject to the jurisdiction of the United States) or a facility,

(2) any person who at the time of disposal of any hazardous substance owned or operated any facility at which such hazardous substances were disposed of,

(3) any person who by contract, agreement, or otherwise arranged for disposal or treatment, or arranged with a trans-

porter for transport for disposal or treatment, of hazardous substances owned or possessed by such person, by any other party or entity, at any facility owned or operated by another party or entity and containing such hazardous substances, and

(4) any person who accepts or accepted any hazardous substances for transport to disposal or treatment facilities or sites selected by such person, from which there is a release, or a threatened release which causes the incurrence of response costs, of a hazardous substance, shall be liable for—

(A) all costs of removal or remedial action incurred by the United States Government or a State not inconsistent with the national contingency plan;

(B) any other necessary costs of response incurred by any other person consistent with the national contingency plan; and

(C) damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss resulting from such a release.

(b) There shall be no liability under subsection (a) of this section for a person otherwise liable who can establish by a preponderance of the evidence that the release or threat of release of a hazardous substance and the damages resulting therefrom were caused solely by—

(1) an act of God;

(2) an act of war;

(3) an act or omission of a third party other than an employee or agent of the defendant, or than one whose act or omission occurs in connection with a contractual relationship, existing directly or indirectly, with the defendant (except where the sole contractual arrangement arises from a published tariff and acceptance for carriage by a common carrier by rail), if the defendant establishes by a preponderance of the evidence that (a) he exercised due care with respect to the hazardous substance concerned, taking into consideration the characteristics of such hazardous substance, in light of all relevant facts and circumstances, and (b) he took precautions against foreseeable acts or omissions of any such third party and the consequences that could foreseeably result from such acts or omissions; or

(4) any combination of the foregoing paragraphs.

(c)(1) Except as provided in paragraph (2) of this subsection, the liability under this section of an owner or operator or other responsible person for each release of a hazardous substance or incident involving release of a hazardous substance shall not exceed—

(A) for any vessel which carries any hazardous substance as cargo or residue, \$300 per gross ton, or \$5,000,000, whichever is greater;

(B) for any other vessel, \$300 per gross ton, or \$500,000, whichever is greater;

(C) for any motor vehicle, aircraft, pipeline (as defined in the Hazardous Liquid Pipeline Safety Act of 1979), or rolling stock, \$50,000,000 or such lesser amount as the President shall establish by regulation, but in no event less than \$5,000,000 (or, for releases of hazardous substances as defined in section 101(14)(A) of this title into the navigable waters, \$8,000,000). Such regulations shall take into account the size, type, location, storage, and handling capacity and other matters relating to the likelihood of release in each such class and to the economic impact of such limits on each such class; or

(D) for any facility other than those specified in subparagraph (C) of this paragraph, the total of all costs of response plus \$50,000,000 for any damages under this title.

(2) Notwithstanding the limitations in paragraph (1) of this subsection, the liability of an owner or operator or other responsible person under this section shall be the full and total costs of response and damages, if (A) (i) the release or threat of release of a hazardous substance was the result of willful misconduct or willful negligence within the privity or knowledge of such person, or (ii) the primary cause of the release was a violation (within the privity or knowledge of such person) of applicable safety, construction, or operating standards or regulations; or (B) such person fails or refuses to provide all reasonable cooperation and assistance requested by a responsible

49 USC 2001
note

public official in connection with response activities under the national contingency plan with respect to regulated carriers subject to the provisions of title 49 of the United States Code or vessels subject to the provisions of title 33 or 46 of the United States Code, subparagraph (A)(ii) of this paragraph shall be deemed to refer to Federal standards or regulations.

(3) If any person who is liable for a release or threat of release of a hazardous substance fails without sufficient cause to properly provide removal or remedial action upon order of the President pursuant to section 104 or 106 of this Act, such person may be liable to the United States for punitive damages in an amount at least equal to, and not more than three times, the amount of any costs incurred by the Fund as a result of such failure to take proper action. The President is authorized to commence a civil action against any such person to recover the punitive damages, which shall be in addition to any costs recovered from such person pursuant to section 112(c) of this Act. Any moneys received by the United States pursuant to this subsection shall be deposited in the Fund.

(d) No person shall be liable under this title for damages as a result of actions taken or omitted in the course of rendering care, assistance, or advice in accordance with the national contingency plan or at the direction of an onscene coordinator appointed under such plan, with respect to an incident creating a danger to public health or welfare or the environment as a result of any release of a hazardous substance or the threat thereof. This subsection shall not preclude liability for damages as the result of gross negligence or intentional misconduct on the part of such person. For the purposes of the preceding sentence, reckless, willful, or wanton misconduct shall constitute gross negligence.

(e)(1) No indemnification, hold harmless, or similar agreement or conveyance shall be effective to transfer from the owner or operator of any vessel or facility or from any person who may be liable for a release or threat of release under this section, to any other person the liability imposed under this section. Nothing in this subsection shall bar any agreement to insure, hold harmless, or indemnify a party to such agreement for any liability under this section.

(2) Nothing in this title, including the provisions of paragraph (1) of this subsection, shall bar a cause of action that an owner or operator or any other person subject to liability under this section, or a guarantor, has or would have, by reason of subrogation or otherwise against any person.

(f) In the case of an injury to, destruction of, or loss of natural resources under subparagraph (C) of subsection (a) liability shall be to the United States Government and to any State for natural resources within the State or belonging to, managed by, controlled by, or appertaining to such State: *Provided, however,* That no liability to the United States or State shall be imposed under subparagraph (C) of subsection (a), where the party sought to be charged has demonstrated that the damages to natural resources complained of were specifically identified as an irreversible and irretrievable commitment of natural resources in an environmental impact statement, or other comparable environment analysis, and the decision to grant a permit or license authorizes such commitment of natural resources, and the facility or project was otherwise operating within the terms of its permit or license. The President, or the authorized representative of any State, shall act on behalf of the public as trustee of such natural resources to recover for such damages. Sums recovered shall be available for use to restore, rehabilitate, or acquire the equivalent of such natural resources by the appropriate agencies of the Federal Government or the State government, but the measure of such damages shall not be limited by the sums which can be used to restore or replace such resources. There shall be no recovery under the authority of subparagraph (C) of subsection (a) where such damages and the release of a hazardous substance from which such damages resulted have occurred wholly before the enactment of this Act.

(g) Each department, agency, or instrumentality of the executive, legislative, and judicial branches of the Federal Government shall be subject to, and comply with, this Act in the same manner and to the same extent, both procedurally and substantively, as any nongovernmental entity, including liability under this section.

(h) The owner or operator of a vessel shall be liable in accordance with this section and as provided under section 114 of this Act notwithstanding any provision of the Act of March 3, 1851 (46 U.S.C. 183f).

(i) No person (including the United States or any State) may recover under the authority of this section for any response costs or damages resulting from the application of a pesticide product registered under the Federal Insecticide, Fungicide, and Rodenticide Act. Nothing in this paragraph shall affect or modify in any way the obligations or liability of any person under any other provision of State or Federal law, including common law, for damages, injury, or loss resulting from a release of any hazardous substance or for removal or remedial action or the costs of removal or remedial action of such hazardous substance.

7 USC 136 note.

(j) Recovery by any person (including the United States or any State) for response costs or damages resulting from a federally permitted release shall be pursuant to existing law in lieu of this section. Nothing in this paragraph shall affect or modify in any way the obligations or liability of any person under any other provision of State or Federal law, including common law, for damages, injury, or loss resulting from a release of any hazardous substance or for removal or remedial action or the costs of removal or remedial action of such hazardous substance. In addition, costs of response incurred by the Federal Government in connection with a discharge specified in section 101(10) (B) or (C) shall be recoverable in an action brought under section 309(b) of the Clean Water Act.

33 USC 1319.

(k)(1) The liability established by this section or any other law for the owner or operator of a hazardous waste disposal facility which has received a permit under subtitle C of the Solid Waste Disposal Act, shall be transferred to and assumed by the Post-closure Liability Fund established by section 232 of this Act when—

Post, p. 2804.

(A) such facility and the owner and operator thereof has complied with the requirements of subtitle C of the Solid Waste Disposal Act and regulations issued thereunder, which may affect the performance of such facility after closure; and

(B) such facility has been closed in accordance with such regulations and the conditions of such permit, and such facility and the surrounding area have been monitored as required by such regulations and permit conditions for a period not to exceed five years after closure to demonstrate that there is no substantial likelihood that any migration offsite or release from confinement of any hazardous substance or other risk to public health or welfare will occur.

(2) Such transfer of liability shall be effective ninety days after the owner or operator of such facility notifies the Administrator of the Environmental Protection Agency (and the State where it has an authorized program under section 3006(b) of the Solid Waste Disposal Act) that the conditions imposed by this subsection have been satisfied. If within such ninety-day period the Administrator of the Environmental Protection Agency or such State determines that any such facility has not complied with all the conditions imposed by this subsection or that insufficient information has been provided to demonstrate such compliance, the Administrator or such State shall so notify the owner and operator of such facility and the administrator of the Fund established by section 232 of this Act, and the owner and operator of such facility shall continue to be liable with respect to such facility under this section and other law until such time as the Administrator and such State determines that such facility has complied with all conditions imposed by this subsection. A determination by the Administrator or such State that a facility has not complied with all conditions imposed by this subsection or that insufficient information has been supplied to demonstrate compliance, shall be a final administrative action for purposes of judicial review. A request for additional information shall state in specific terms the data required.

42 USC 6926.

(3) In addition to the assumption of liability of owners and operators under paragraph (1) of this subsection, the Post-closure Liability Fund established by section 232 of this Act may be used to pay costs of monitoring and care and maintenance of a site incurred by other persons after the period of monitoring required by regulations under

42 USC 6921.

subtitle C of the Solid Waste Disposal Act for hazardous waste disposal facilities meeting the conditions of paragraph (1) of this subsection.

(4)(A) Not later than one year after the date of enactment of this Act, the Secretary of the Treasury shall conduct a study and shall submit a report thereon to the Congress on the feasibility of establishing or qualifying an optional system of private insurance for postclosure financial responsibility for hazardous waste disposal facilities to which this subsection applies. Such study shall include a specification of adequate and realistic minimum standards to assure that any such privately placed insurance will carry out the purposes of this subsection in a reliable, enforceable, and practical manner. Such a study shall include an examination of the public and private incentives, programs, and actions necessary to make privately placed insurance a practical and effective option to the financing system for the Post-closure Liability Fund provided in title II of this Act.

(B) Not later than eighteen months after the date of enactment of this Act and after a public hearing, the President shall by rule determine whether or not it is feasible to establish or qualify an optional system of private insurance for postclosure financial responsibility for hazardous waste disposal facilities to which this subsection applies. If the President determines the establishment or qualification of such a system would be infeasible, he shall promptly publish an explanation of the reasons for such a determination. If the President determines the establishment or qualification of such a system would be feasible, he shall promptly publish notice of such determination. Not later than six months after an affirmative determination under the preceding sentence and after a public hearing, the President shall by rule promulgate adequate and realistic minimum standards which must be met by any such privately placed insurance, taking into account the purposes of this Act and this subsection. Such rules shall also specify reasonably expeditious procedures by which privately placed insurance plans can qualify as meeting such minimum standards.

(C) In the event any privately placed insurance plan qualifies under subparagraph (B), any person enrolled in, and complying with the terms of, such plan shall be excluded from the provisions of paragraphs (1), (2), and (3) of this subsection and exempt from the requirements to pay any tax or fee to the Post-closure Liability Fund under title II of this Act.

Rules.

(D) The President may issue such rules and take such other actions as are necessary to effectuate the purposes of this paragraph.

FINANCIAL RESPONSIBILITY

42 USC 9608.

SEC. 108. (a)(1) The owner or operator of each vessel (except a non-self-propelled barge that does not carry hazardous substances as cargo) over three hundred gross tons that uses any port or place in the United States or the navigable waters or any offshore facility, shall establish and maintain, in accordance with regulations promulgated by the President, evidence of financial responsibility of \$300 per gross ton (or for a vessel carrying hazardous substances as cargo, or \$5,000,000, whichever is greater). Financial responsibility may be established by any one, or any combination, of the following: insurance, guarantee, surety bond, or qualification as a self-insurer. Any bond filed shall be issued by a bonding company authorized to do business in the United States. In cases where an owner or operator owns, operates, or charters more than one vessel subject to this subsection, evidence of financial responsibility need be established only to meet the maximum liability applicable to the largest of such vessels.

46 USC 91.

(2) The Secretary of the Treasury shall withhold or revoke the clearance required by section 4197 of the Revised Statutes of the United States of any vessel subject to this subsection that does not have certification furnished by the President that the financial responsibility provisions of paragraph (1) of this subsection have been complied with.

(3) The Secretary of Transportation, in accordance with regulations issued by him, shall (A) deny entry to any port or place in the United States or navigable waters to, and (B) detain at the port or place in the United States from which it is about to depart for any other port

or place in the United States, any vessel subject to this subsection that, upon request, does not produce certification furnished by the President that the financial responsibility provisions of paragraph (1) of this subsection have been complied with.

(b)(1) Beginning not earlier than five years after the date of enactment of this Act, the President shall promulgate requirements (for facilities in addition to those under subtitle C of the Solid Waste Disposal Act and other Federal law) that classes of facilities establish and maintain evidence of financial responsibility consistent with the degree and duration of risk associated with the production, transportation, treatment, storage, or disposal of hazardous substances. Not later than three years after the date of enactment of the Act, the President shall identify those classes for which requirements will be first developed and publish notice of such identification in the Federal Register. Priority in the development of such requirements shall be accorded to those classes of facilities, owners, and operators which the President determines present the highest level of risk of injury.

42 USC 6921.

Publication in
Federal Register

(2) The level of financial responsibility shall be initially established, and, when necessary, adjusted to protect against the level of risk which the President in his discretion believes is appropriate based on the payment experience of the Fund, commercial insurers, courts settlements and judgments, and voluntary claims satisfaction. To the maximum extent practicable, the President shall cooperate with and seek the advice of the commercial insurance industry in developing financial responsibility requirements.

(3) Regulations promulgated under this subsection shall incrementally impose financial responsibility requirements over a period of not less than three and no more than six years after the date of promulgation. Where possible, the level of financial responsibility which the President believes appropriate as a final requirement shall be achieved through incremental, annual increases in the requirements.

(4) Where a facility is owned or operated by more than one person, evidence of financial responsibility covering the facility may be established and maintained by one of the owners or operators, or, in consolidated form, by or on behalf of two or more owners or operators. When evidence of financial responsibility is established in a consolidated form, the proportional share of each participant shall be shown. The evidence shall be accompanied by a statement authorizing the applicant to act for and in behalf of each participant in submitting and maintaining the evidence of financial responsibility.

(5) The requirements for evidence of financial responsibility for motor carriers covered by this Act shall be determined under section 30 of the Motor Carrier Act of 1980, Public Law 96-296.

Ante, p. 20.

(c) Any claim authorized by section 107 or 111 may be asserted directly against any guarantor providing evidence of financial responsibility as required under this section. In defending such a claim, the guarantor may invoke all rights and defenses which would be available to the owner or operator under this title. The guarantor may also invoke the defense that the incident was caused by the willful misconduct of the owner or operator, but such guarantor may not invoke any other defense that such guarantor might have been entitled to invoke in a proceeding brought by the owner or operator against him.

(d) Any guarantor acting in good faith against which claims under this Act are asserted as a guarantor shall be liable under section 107 or section 112(c) of this title only up to the monetary limits of the policy of insurance or indemnity contract such guarantor has undertaken or of the guaranty of other evidence of financial responsibility furnished under section 108 of this Act, and only to the extent that liability is not excluded by restrictive endorsement: *Provided*, That this subsection shall not alter the liability of any person under section 107 of this Act.

PENALTY

SEC 109. Any person who, after notice and an opportunity for a hearing, is found to have failed to comply with the requirements of section 108, the regulations issued thereunder, or with any denial or detention order shall be liable to the United States for a civil penalty, not to exceed \$10,000 for each day of violation.

42 USC 6909.

EMPLOYEE PROTECTION

42 USC 9610

Sec. 110. (a) No person shall fire or in any other way discriminate against, or cause to be fired or discriminated against, any employee or any authorized representative of employees by reason of the fact that such employee or representative has provided information to a State or to the Federal Government, filed, instituted, or caused to be filed or instituted any proceeding under this Act, or has testified or is about to testify in any proceeding resulting from the administration or enforcement of the provisions of this Act.

(b) Any employee or a representative of employees who believes that he has been fired or otherwise discriminated against by any person in violation of subsection (a) of this section may, within thirty days after such alleged violation occurs, apply to the Secretary of Labor for a review of such firing or alleged discrimination. A copy of the application shall be sent to such person, who shall be the respondent. Upon receipt of such application, the Secretary of Labor shall cause such investigation to be made as he deems appropriate. Such investigation shall provide an opportunity for a public hearing at the request of any party to such review to enable the parties to present information relating to such alleged violation. The parties shall be given written notice of the time and place of the hearing at least five days prior to the hearing. Any such hearing shall be of record and shall be subject to section 554 of title 5, United States Code. Upon receiving the report of such investigation, the Secretary of Labor shall make findings of fact. If he finds that such violation did occur, he shall issue a decision, incorporating an order therein and his findings, requiring the party committing such violation to take such affirmative action to abate the violation as the Secretary of Labor deems appropriate, including, but not limited to, the rehiring or reinstatement of the employee or representative of employees to his former position with compensation. If he finds that there was no such violation, he shall issue an order denying the application. Such order issued by the Secretary of Labor under this subparagraph shall be subject to judicial review in the same manner as orders and decisions are subject to judicial review under this Act.

(c) Whenever an order is issued under this section to abate such violation, at the request of the applicant a sum equal to the aggregate amount of all costs and expenses (including the attorney's fees) determined by the Secretary of Labor to have been reasonably incurred by the applicant for, or in connection with, the institution and prosecution of such proceedings, shall be assessed against the person committing such violation.

(d) This section shall have no application to any employee who acting without discretion from his employer (or his agent) deliberately violates any requirement of this Act.

(e) The President shall conduct continuing evaluations of potential loss of shifts of employment which may result from the administration or enforcement of the provisions of this Act, including, where appropriate, investigating threatened plant closures or reductions in employment allegedly resulting from such administration or enforcement. Any employee who is discharged, or laid off, threatened with discharge or layoff, or otherwise discriminated against by any person because of the alleged results of such administration or enforcement, or any representative of such employee, may request the President to conduct a full investigation of the matter and, at the request of any party, shall hold public hearings, require the parties, including the employer involved, to present information relating to the actual or potential effect of such administration or enforcement on employment and any alleged discharge, layoff, or other discrimination, and the detailed reasons or justification therefore. Any such hearing shall be of record and shall be subject to section 554 of title 5, United States Code. Upon receiving the report of such investigation, the President shall make findings of fact as to the effect of such administration or enforcement on employment and on the alleged discharge, layoff, or discrimination and shall make such recommendations as he deems appropriate. Such report, findings, and recommendations shall be available to the public. Nothing in this subsection shall be construed to require or authorize the President or any State to modify or

withdraw any action, standard, limitation, or any other requirement of this Act.

USES OF FUND

Sec. 111. (a) The President shall use the money in the Fund for the following purposes: 42 USC 9611.

(1) payment of governmental response costs incurred pursuant to section 104 of this title, including costs incurred pursuant to the Intervention on the High Seas Act;

33 USC 1171
note.

(2) payment of any claim for necessary response costs incurred by any other person as a result of carrying out the national contingency plan established under section 311(c) of the Clean Water Act and amended by section 105 of this title: *Provided, however,* That such costs must be approved under said plan and certified by the responsible Federal official;

33 USC 1121

(3) payment of any claim authorized by subsection (b) of this section and finally decided pursuant to section 112 of this title, including those costs set out in subsection 112(c)(3) of this title; and

(4) payment of costs specified under subsection (c) of this section.

The President shall not pay for any administrative costs or expenses out of the Fund unless such costs and expenses are reasonably necessary for and incidental to the implementation of this title.

(b) Claims asserted and compensable but unsatisfied under provisions of section 311 of the Clean Water Act, which are modified by section 304 of this Act may be asserted against the Fund under this title; and other claims resulting from a release or threat of release of a hazardous substance from a vessel or a facility may be asserted against the Fund under this title for injury to, or destruction or loss of, natural resources, including cost for damage assessment: *Provided, however,* That any such claim may be asserted only by the President, as trustee, for natural resources over which the United States has sovereign rights, or natural resources within the territory or the fishery conservation zone of the United States to the extent they are managed or protected by the United States, or by any State for natural resources within the boundary of that State belonging to, managed by, controlled by, or appertaining to the State.

Post p. 509.

(c) Uses of the Fund under subsection (a) of this section include—

(1) the costs of assessing both short-term and long-term injury to, destruction of, or loss of any natural resources resulting from a release of a hazardous substance;

(2) the costs of Federal or State efforts in the restoration, rehabilitation, or replacement or acquiring the equivalent of any natural resources injured, destroyed, or lost as a result of a release of a hazardous substance;

(3) subject to such amounts as are provided in appropriation Acts, the costs of a program to identify, investigate, and take enforcement and abatement action against releases of hazardous substances;

(4) the costs of epidemiologic studies, development and maintenance of a registry of persons exposed to hazardous substances to allow long-term health effect studies, and diagnostic services not otherwise available to determine whether persons in populations exposed to hazardous substances in connection with a release or a suspected release are suffering from long-latency diseases;

(5) subject to such amounts as are provided in appropriation Acts, the costs of providing equipment and similar overhead, related to the purposes of this Act and section 311 of the Clean Water Act, and needed to supplement equipment and services available through contractors or other non-Federal entities, and of establishing and maintaining damage assessment capability, for any Federal agency involved in strike forces, emergency task forces, or other response teams under the national contingency plan; and

(6) subject to such amounts as are provided in appropriation Acts, the costs of a program to protect the health and safety of employees involved in response to hazardous substance releases. Such program shall be developed jointly by the Environmental

Protection Agency, the Occupational Safety and Health Administration, and the National Institute for Occupational Safety and Health and shall include, but not be limited to, measures for identifying and assessing hazards to which persons engaged in removal, remedy, or other response to hazardous substances may be exposed, methods to protect workers from such hazards, and necessary regulatory and enforcement measures to assure adequate protection of such employees.

(d)(1) No money in the Fund may be used under subsection (c) (1) and (2) of this section, nor for the payment of any claim under subsection (b) of this section, where the injury, destruction, or loss of natural resources and the release of a hazardous substance from which such damages resulted have occurred wholly before the enactment of this Act.

(2) No money in the Fund may be used for the payment of any claim under subsection (b) of this section where such expenses are associated with injury or loss resulting from long-term exposure to ambient concentrations of air pollutants from multiple or diffuse sources.

(e)(1) Claims against or presented to the Fund shall not be valid or paid in excess of the total money in the Fund at any one time. Such claims become valid only when additional money is collected, appropriated, or otherwise added to the Fund. Should the total claims outstanding at any time exceed the current balance of the Fund, the President shall pay such claims, to the extent authorized under this section, in full in the order in which they were finally determined.

(2) In any fiscal year, 85 percent of the money credited to the Fund under title II of this Act shall be available only for the purposes specified in paragraphs (1), (2), and (4) of subsection (a) of this section.

(3) No money in the Fund shall be available for remedial action, other than actions specified in subsection (c) of this section, with respect to federally owned facilities.

(4) Paragraphs (1) and (4) of subsection (a) of this section shall in the aggregate be subject to such amounts as are provided in appropriation Acts.

Regulations.

(f) The President is authorized to promulgate regulations designating one or more Federal officials who may obligate money in the Fund in accordance with this section or portions thereof. The President is also authorized to delegate authority to obligate money in the Fund or to settle claims to officials of a State operating under a contract or cooperative agreement with the Federal Government pursuant to section 104(d) of this title.

(g) The President shall provide for the promulgation of rules and regulations with respect to the notice to be provided to potential injured parties by an owner and operator of any vessel, or facility from which a hazardous substance has been released. Such rules and regulations shall consider the scope and form of the notice which would be appropriate to carry out the purposes of this title. Upon promulgation of such rules and regulations, the owner and operator of any vessel or facility from which a hazardous substance has been released shall provide notice in accordance with such rules and regulations. With respect to releases from public vessels, the President shall provide such notification as is appropriate to potential injured parties. Until the promulgation of such rules and regulations, the owner and operator of any vessel or facility from which a hazardous substance has been released shall provide reasonable notice to potential injured parties by publication in local newspapers serving the affected area.

(h)(1) In accordance with regulations promulgated under section 301(c) of this Act, damages for injury to, destruction of, or loss of natural resources resulting from a release of a hazardous substance, for the purposes of this Act and section 311(f) (4) and (5) of the Federal Water Pollution Control Act, shall be assessed by Federal officials designated by the President under the national contingency plan published under section 105 of the Act, and such officials shall act for the President as trustee under this section and section 311(f)(5) of the Federal Water Pollution Control Act.

(2) Any determination or assessment of damages for injury to, destruction of, or loss of natural resources for the purposes of this Act and section 311(f) (4) and (5) of the Federal Water Pollution Control Act shall have the force and effect of a rebuttable presumption on

behalf of any claimant (including a trustee under section 107 of this Act or a Federal agency) in any judicial or adjudicatory administrative proceeding under this Act or section 311 of the Federal Water Pollution Control Act.

(i) Except in a situation requiring action to avoid an irreversible loss of natural resources or to prevent or reduce any continuing danger to natural resources or similar need for emergency action, funds may not be used under this Act for the restoration, rehabilitation, or replacement or acquisition of the equivalent of any natural resources until a plan for the use of such funds for such purposes has been developed and adopted by affected Federal agencies and the Governor or Governors of any State having sustained damage to natural resources within its borders, belonging to, managed by or appertaining to such State, after adequate public notice and opportunity for hearing and consideration of all public comment.

(j) The President shall use the money in the Post-closure Liability Fund for any of the purposes specified in subsection (a) of this section with respect to a hazardous waste disposal facility for which liability has transferred to such fund under section 107(k) of this Act, and, in addition, for payment of any claim or appropriate request for costs of response, damages, or other compensation for injury or loss under section 107 of this Act or any other State or Federal law, resulting from a release of a hazardous substance from such a facility.

(k) The Inspector General of each department or agency to which responsibility to obligate money in the Fund is delegated shall provide an audit review team to audit all payments, obligations, reimbursements, or other uses of the Fund, to assure that the Fund is being properly administered and that claims are being appropriately and expeditiously considered. Each such Inspector General shall submit to the Congress an interim report one year after the establishment of the Fund and a final report two years after the establishment of the Fund. Each such Inspector General shall thereafter provide such auditing of the Fund as is appropriate. Each Federal agency shall cooperate with the Inspector General in carrying out this subsection.

Report to
Congress.

(l) To the extent that the provisions of this Act permit, a foreign claimant may assert a claim to the same extent that a United States claimant may assert a claim if—

(1) the release of a hazardous substance occurred (A) in the navigable waters or (B) in or on the territorial sea or adjacent shoreline of a foreign country of which the claimant is a resident;

(2) the claimant is not otherwise compensated for his loss;

(3) the hazardous substance was released from a facility or from a vessel located adjacent to or within the navigable waters or was discharged in connection with activities conducted under the Outer Continental Shelf Lands Act, as amended (43 U.S.C. 1331 et seq.) or the Deepwater Port Act of 1974, as amended (33 U.S.C. 1501 et seq.); and

(4) recovery is authorized by a treaty or an executive agreement between the United States and foreign country involved, or if the Secretary of State, in consultation with the Attorney General and other appropriate officials, certifies that such country provides a comparable remedy for United States claimants.

CLAIMS PROCEDURE

Sec. 112. (a) All claims which may be asserted against the Fund pursuant to section 111 of this title shall be presented in the first instance to the owner, operator, or guarantor of the vessel or facility from which a hazardous substance has been released, if known to the claimant, and to any other person known to the claimant who may be liable under section 107 of this title. In any case where the claim has not been satisfied within sixty days of presentation in accordance with this subsection, the claimant may elect to commence an action in court against such owner, operator, guarantor, or other person or to present the claim to the Fund for payment.

42 USC 9612

(b)(1) The President shall prescribe appropriate forms and procedures for claims filed hereunder, which shall include a provision

requiring the claimant to make a sworn verification of the claim to the best of his knowledge. Any person who knowingly gives or causes to be given any false information as a part of any such claim shall, upon conviction, be fined up to \$5,000 or imprisoned for not more than one year, or both.

(2)(A) Upon receipt of any claim, the President shall as soon as practicable inform any known affected parties of the claim and shall attempt to promote and arrange a settlement between the claimant and any person who may be liable. If the claimant and alleged liable party or parties can agree upon a settlement, it shall be final and binding upon the parties thereto, who will be deemed to have waived all recourse against the Fund.

(B) Where a liable party is unknown or cannot be determined, the claimant and the President shall attempt to arrange settlement of any claim against the Fund. The President is authorized to award and make payment of such a settlement, subject to such proof and procedures as he may promulgate by regulation.

(C) Except as provided in subparagraph (D) of this paragraph, the President shall use the facilities and services of private insurance and claims adjusting organizations or State agencies in implementing this subsection and may contract to pay compensation for those facilities and services. Any contract made under the provisions of this paragraph may be made without regard to the provisions of section 3709 of the Revised Statutes, as amended (41 U.S.C. 5), upon a showing by the President that advertising is not reasonably practicable. When the services of a State agency are used hereunder, no payment may be made on a claim asserted on behalf of that State or any of its agencies or subdivisions unless the payment has been approved by the President.

(D) To the extent necessitated by extraordinary circumstances, where the services of such private organizations or State agencies are inadequate, the President may use Federal personnel to implement this subsection.

(3) If no settlement is reached within forty-five days of filing of a claim through negotiation pursuant to this section, the President may, if he is satisfied that the information developed during the processing of the claim warrants it, make and pay an award of the claim. If the claimant is dissatisfied with the award, he may appeal it in the manner provided for in subparagraph (G) of paragraph (4) of this subsection. If the President declines to make an award, he shall submit the claim for decision to a member of the Board of Arbitrators established pursuant to paragraph (4).

(4)(A) Within ninety days of the enactment of this Act, the President shall establish a Board of Arbitrators to implement this subsection. The Board shall consist of as many members as the President may determine will be necessary to implement this subsection expeditiously, and he may increase or decrease the size of the Board at any time in his discretion in order to enable it to respond to the demands of such implementation. Each member of the Board shall be selected through utilization of the procedures of the American Arbitration Association: *Provided, however,* That no regular employee of the President or any of the Federal departments, administrations, or agencies to whom he delegated responsibilities under this Act shall act as a member of the Board.

(B) Hearings conducted hereunder shall be public and shall be held in such place as may be agreed upon by the parties thereto, or, in the absence of such agreement, in such place as the President determines, in his discretion, will be most convenient for the parties thereto.

(C) Hearings before a member of the Board shall be informal, and the rules of evidence prevailing in judicial proceedings need not be required. Each member of the Board shall have the power to administer oaths and to subpoena the attendance and testimony of witnesses and the production of books, records, and other evidence relative or pertinent to the issues presented to him for decision. Testimony may be taken by interrogatory or deposition. Each person appearing before a member of the Board shall have the right to counsel. Subpoenas shall be issued and enforced in accordance with procedures in subsection (d) of section 555 of title 5, United States Code, and rules promulgated by the President. If a person fails or refuses to obey a

subpena, the President may invoke the aid of the district court of the United States where the person is found, resides, or transacts business in requiring the attendance and testimony of the person and the production by him of books, papers, documents, or any tangible things.

(D) In any proceeding before a member of the Board, the claimant shall bear the burden of proving his claim. Should a member of the Board determine that further investigations, monitoring, surveys, testing, or other information gathering would be useful and necessary in deciding the claim, he may request the President in writing to undertake such activities pursuant to section 104(b) of this title. The President shall dispose of such a request in his sole discretion, taking into account various competing demands and the availability of the technical and financial capacity to conduct such studies, monitoring, and investigations. Should the President decide to undertake the requested actions, all time requirements for the processing and deciding of claims hereunder shall be suspended until the President reports the results thereof to the member of the Board.

(E) All costs and expenses approved by the President attributable to the employment of any member of the Board shall be payable from the Fund, including fees and mileage expenses for witnesses summoned by such members on the same basis and to the same extent as if such witnesses were summoned before a district court of the United States.

(F) All decisions rendered by members of the Board shall be in writing, with notification to all appropriate parties, and shall be rendered within ninety days of submission of a claim to a member, unless all the parties to the claim agree in writing to an extension or unless the President extends the time limit pursuant to subparagraph (I) of this subsection.

(G) All decisions rendered by members of the Board shall be final, and any party to the proceeding may appeal such a decision within thirty days of notification of the award or decision. Any such appeal shall be made to the Federal district court for the district where the arbitral hearing took place. In any such appeal, the award or decision of the member of the Board shall be considered binding and conclusive, and shall not be overturned except for arbitrary or capricious abuse of the member's discretion: *Provided, however,* That no such award or decision shall be admissible as evidence of any issue of fact or law in any proceeding brought under any other provision of this Act or under any other provision of law. Nor shall any prearbitral settlement reached pursuant to subsection (b)(2)(A) of this section be admissible as evidence in any such proceeding.

(H) Within twenty days of the expiration of the appeal period for any arbitral award or decision, or within twenty days of the final judicial determination of any appeal taken pursuant to this subsection, the President shall pay any such award from the Fund. The President shall determine the method, terms, and time of payment.

(I) If at any time the President determines that, because of a large number of claims arising from any incident or set of incidents, it is in the best interests of the parties concerned, he may extend the time for prearbitral negotiation or for rendering an arbitral decision pursuant to this subsection by a period not to exceed sixty days. He may also group such claims for submission to a member of the Board of Arbitrators.

(c)(1) Payment of any claim by the Fund under this section shall be subject to the United States Government acquiring by subrogation the rights of the claimant to recover those costs of removal or damages for which it has compensated the claimant from the person responsible or liable for such release.

(2) Any person, including the Fund, who pays compensation pursuant to this Act to any claimant for damages or costs resulting from a release of a hazardous substance shall be subrogated to all rights, claims, and causes of action for such damages and costs of removal that the claimant has under this Act or any other law.

(3) Upon request of the President, the Attorney General shall commence an action on behalf of the Fund to recover any compensation paid by the Fund to any claimant pursuant to this title, and, without regard to any limitation of liability, all interest, administrative and adjudicative costs, and attorney's fees incurred by the Fund

by reason of the claim. Such an action may be commenced against any owner, operator, or guarantor, or against any other person who is liable, pursuant to any law, to the compensated claimant or to the Fund, for the damages or costs for which compensation was paid.

(d) No claim may be presented, nor may an action be commenced for damages under this title, unless that claim is presented or action commenced within three years from the date of the discovery of the loss or the date of enactment of this Act, whichever is later: *Provided, however,* That the time limitations contained herein shall not begin to run against a minor until he reaches eighteen years of age or a legal representative is duly appointed for him, nor against an incompetent person until his incompetency ends or a legal representative is duly appointed for him.

(e) Regardless of any State statutory or common law to the contrary, no person who asserts a claim against the Fund pursuant to this title shall be deemed or held to have waived any other claim not covered or assertable against the Fund under this title arising from the same incident, transaction, or set of circumstances, nor to have split a cause of action. Further, no person asserting a claim against the Fund pursuant to this title shall as a result of any determination of a question of fact or law made in connection with that claim be deemed or held to be collaterally estopped from raising such question in connection with any other claim not covered or assertable against the Fund under this title arising from the same incident, transaction, or set of circumstances.

LITIGATION, JURISDICTION AND VENUE

42 USC 9613

SEC. 113. (a) Review of any regulation promulgated under this Act may be had upon application by any interested person only in the Circuit Court of Appeals of the United States for the District of Columbia. Any such application shall be made within ninety days from the date of promulgation of such regulations. Any matter with respect to which review could have been obtained under this subsection shall not be subject to judicial review in any civil or criminal proceeding for enforcement or to obtain damages or recovery of response costs.

(b) Except as provided in subsection (a) of this section, the United States district courts shall have exclusive original jurisdiction over all controversies arising under this Act, without regard to the citizenship of the parties or the amount in controversy. Venue shall lie in any district in which the release or damages occurred, or in which the defendant resides, may be found, or has his principal office. For the purposes of this section, the Fund shall reside in the District of Columbia.

(c) The provisions of subsections (a) and (b) of this section shall not apply to any controversy or other matter resulting from the assessment of collection of any tax, as provided by title II of this Act, or to the review of any regulation promulgated under the Internal Revenue Code of 1954.

26 USC 1 et seq

(d) No provision of this Act shall be deemed or held to moot any litigation concerning any release of any hazardous substance, or any damages associated therewith, commenced prior to enactment of this Act.

RELATIONSHIP TO OTHER LAW

42 USC 9611

SEC. 114. (a) Nothing in this Act shall be construed or interpreted as preempting any State from imposing any additional liability or requirements with respect to the release of hazardous substances within such State.

(b) Any person who receives compensation for removal costs or damages or claims pursuant to this Act shall be precluded from recovering compensation for the same removal costs or damages or claims pursuant to any other State or Federal law. Any person who receives compensation for removal costs or damages or claims pursuant to any other Federal or State law shall be precluded from receiving compensation for the same removal costs or damages or claims as provided in this Act.

(c) Except as provided in this Act, no person may be required to contribute to any fund, the purpose of which is to pay compensation for claims for any costs of response or damages or claims which may be compensated under this title. Nothing in this section shall preclude any State from using general revenues for such a fund, or from imposing a tax or fee upon any person or upon any substance in order to finance the purchase or prepositioning of hazardous substance response equipment or other preparations for the response to a release of hazardous substances which affects such State.

(d) Except as provided in this title, no owner or operator of a vessel or facility who establishes and maintains evidence of financial responsibility in accordance with this title shall be required under any State or local law, rule, or regulation to establish or maintain any other evidence of financial responsibility in connection with liability for the release of a hazardous substance from such vessel or facility. Evidence of compliance with the financial responsibility requirements of this title shall be accepted by a State in lieu of any other requirement of financial responsibility imposed by such State in connection with liability for the release of a hazardous substance from such vessel or facility.

AUTHORITY TO DELEGATE, ISSUE REGULATIONS

SEC. 115. The President is authorized to delegate and assign any duties or powers imposed upon or assigned to him and to promulgate any regulations necessary to carry out the provisions of this title. 42 USC 9615.

TITLE II—HAZARDOUS SUBSTANCE RESPONSE REVENUE ACT OF 1980

Hazardous
Substance
Response
Revenue Act of
1980
26 USC 1 note.

SEC. 201. SHORT TITLE: AMENDMENT OF 1954 CODE.

(a) **SHORT TITLE.**—This title may be cited as the "Hazardous Substance Response Revenue Act of 1980".

(b) **AMENDMENT OF 1954 CODE.**—Except as otherwise expressly provided, whenever in this title an amendment or repeal is expressed in terms of an amendment to, or repeal of, a section or other provision, the reference shall be considered to be made to a section or other provision of the Internal Revenue Code of 1954. 26 USC 1 et seq.

Subtitle A—Imposition of Taxes on Petroleum and Certain Chemicals

SEC. 211. IMPOSITION OF TAXES.

(a) **GENERAL RULE.**—Subtitle D (relating to miscellaneous excise taxes) is amended by inserting after chapter 37 the following new chapter:

"CHAPTER 38—ENVIRONMENTAL TAXES

"SUBCHAPTER A. Tax on petroleum.
"SUBCHAPTER B. Tax on certain chemicals.

"Subchapter A—Tax on Petroleum

"Sec. 4611. Imposition of tax.
"Sec. 4612. Definitions and special rules.

"SEC. 4611. IMPOSITION OF TAX.

26 USC 4611.

"(a) **GENERAL RULE.**—There is hereby imposed a tax of 0.79 cent a barrel on—

"(1) crude oil received at a United States refinery, and

"(2) petroleum products entered into the United States for consumption, use, or warehousing.

"(b) **TAX ON CERTAIN USES AND EXPORTATION.**—

"(1) **IN GENERAL.**—If—

"(A) any domestic crude oil is used in or exported from the United States, and

"(B) before such use or exportation, no tax was imposed on such crude oil under subsection (a), then a tax of 0.79 cent a barrel is hereby imposed on such crude oil.

"(2) EXCEPTION FOR USE ON PREMISES WHERE PRODUCED.—Paragraph (1) shall not apply to any use of crude oil for extracting oil or natural gas on the premises where such crude oil was produced.

"(C) PERSONS LIABLE FOR TAX.—

"(1) CRUDE OIL RECEIVED AT REFINERY.—The tax imposed by subsection (a)(1) shall be paid by the operator of the United States refinery.

"(2) IMPORTED PETROLEUM PRODUCT.—The tax imposed by subsection (a)(2) shall be paid by the person entering the product for consumption, use, or warehousing.

"(3) TAX ON CERTAIN USES OR EXPORTS.—The tax imposed by subsection (b) shall be paid by the person using or exporting the crude oil, as the case may be.

"(d) TERMINATION.—The taxes imposed by this section shall not apply after September 30, 1985, except that if on September 30, 1983, or September 30, 1984—

"(1) the unobligated balance in the Hazardous Substance Response Trust Fund as of such date exceeds \$900,000,000, and

"(2) the Secretary, after consultation with the Administrator of the Environmental Protection Agency, determines that such unobligated balance will exceed \$500,000,000 on September 30 of the following year if no tax is imposed under section 4611 or 4661 during the calendar year following the date referred to above, then no tax shall be imposed by this section during the first calendar year beginning after the date referred to in paragraph (1).

Post, p. 2798.

26 USC 4612.

"SEC. 4612. DEFINITIONS AND SPECIAL RULES.

"(a) DEFINITIONS.—For purposes of this subchapter—

"(1) CRUDE OIL.—The term 'crude oil' includes crude oil condensates and natural gasoline.

"(2) DOMESTIC CRUDE OIL.—The term 'domestic crude oil' means any crude oil produced from a well located in the United States.

"(3) PETROLEUM PRODUCT.—The term 'petroleum product' includes crude oil.

"(4) UNITED STATES.—

"(A) IN GENERAL.—The term 'United States' means the 50 States, the District of Columbia, the Commonwealth of Puerto Rico, any possession of the United States, the Commonwealth of the Northern Mariana Islands, and the Trust Territory of the Pacific Islands.

26 USC 4612.

"(B) UNITED STATES INCLUDES CONTINENTAL SHELF AREAS.—The principles of section 638 shall apply for purposes of the term 'United States'.

"(C) UNITED STATES INCLUDES FOREIGN TRADE ZONES.—The term 'United States' includes any foreign trade zone of the United States.

"(5) UNITED STATES REFINERY.—The term 'United States refinery' means any facility in the United States at which crude oil is refined.

"(6) REFINERIES WHICH PRODUCE NATURAL GASOLINE.—In the case of any United States refinery which produces natural gasoline from natural gas, the gasoline so produced shall be treated as received at such refinery at the time so produced.

"(7) PREMISES.—The term 'premises' has the same meaning as when used for purposes of determining gross income from the property under section 613.

"(8) BARREL.—The term 'barrel' means 42 United States gallons.

"(9) FRACTIONAL PART OF BARREL.—In the case of a fraction of a barrel, the tax imposed by section 4611 shall be the same fraction of the amount of such tax imposed on a whole barrel.

Ante, p. 2797

"(b) ONLY 1 TAX IMPOSED WITH RESPECT TO ANY PRODUCT.—No tax shall be imposed by section 4611 with respect to any petroleum

product if the person who would be liable for such tax establishes that a prior tax imposed by such section has been imposed with respect to such product.

"(c) DISPOSITION OF REVENUES FROM PUERTO RICO AND THE VIRGIN ISLANDS.—The provisions of subsections (a)(3) and (b)(3) of section 7652 shall not apply to any tax imposed by section 4611.

"Subchapter B—Tax on Certain Chemicals

"Sec. 4661. Imposition of tax.

"Sec. 4662. Definitions and special rules.

"SEC. 4661. IMPOSITION OF TAX.

26 USC 4661.

"(a) GENERAL RULE.—There is hereby imposed a tax on any taxable chemical sold by the manufacturer, producer, or importer thereof.

"(b) AMOUNT OF TAX.—The amount of the tax imposed by subsection (a) shall be determined in accordance with the following table:

"In the case of:	The tax is the following amount per ton
Acetylene.....	\$4.87
Benzene.....	4.87
Butane.....	4.87
Butylene.....	4.87
Butadiene.....	4.87
Ethylene.....	4.87
Methane.....	3.44
Naphthalene.....	4.87
Propylene.....	4.87
Toluene.....	4.87
Xylene.....	4.87
Ammonia.....	2.64
Antimony.....	4.45
Antimony trioxide.....	3.75
Arsenic.....	4.45
Arsenic trioxide.....	3.41
Barium sulfide.....	2.30
Bromine.....	4.45
Cadmium.....	4.45
Chlorine.....	2.70
Chromium.....	4.45
Chromite.....	1.52
Potassium dichromate.....	1.69
Sodium dichromate.....	1.87
Cobalt.....	4.45
Cupric sulfate.....	1.87
Cupric oxide.....	3.59
Cuprous oxide.....	3.97
Hydrochloric acid.....	0.29
Hydrogen fluoride.....	4.23
Lead oxide.....	4.14
Mercury.....	4.45
Nickel.....	4.45
Phosphorus.....	4.45
Stannous chloride.....	2.85
Stannic chloride.....	2.12
Zinc chloride.....	2.22
Zinc sulfate.....	1.90
Potassium hydroxide.....	0.22
Sodium hydroxide.....	0.28
Sulfuric acid.....	0.26
Nitric acid.....	0.24

"(c) TERMINATION.—No tax shall be imposed under this section during any period during which no tax is imposed under section 4611(a).

"SEC. 4662. DEFINITIONS AND SPECIAL RULES.

26 USC 4662.

"(a) DEFINITIONS.—For purposes of this subchapter—

"(1) TAXABLE CHEMICAL.—Except as provided in subsection (b), the term 'taxable chemical' means any substance—

"(A) which is listed in the table under section 4661(b), and

Ante. p. 2798.

"(B) which is manufactured or produced in the United States or entered into the United States for consumption, use, or warehousing.

"(2) UNITED STATES.—The term 'United States' has the meaning given such term by section 4612(a)(4).

Ante. p. 2798.

"(3) IMPORTER.—The term 'importer' means the person entering the taxable chemical for consumption, use, or warehousing.

"(4) **TON.**—The term 'ton' means 2,000 pounds. In the case of any taxable chemical which is a gas, the term 'ton' means the amount of such gas in cubic feet which is the equivalent of 2,000 pounds on a molecular weight basis.

"(5) **FRACTIONAL PART OF TON.**—In the case of a fraction of a ton, the tax imposed by section 4661 shall be the same fraction of the amount of such tax imposed on a whole ton.

"(b) **EXCEPTIONS; OTHER SPECIAL RULES.**—For purposes of this subchapter—

"(1) **METHANE OR BUTANE USED AS A FUEL.**—Under regulations prescribed by the Secretary, methane or butane shall be treated as a taxable chemical only if it is used otherwise than as a fuel (and, for purposes of section 4661(a), the person so using it shall be treated as the manufacturer thereof).

"(2) **SUBSTANCES USED IN THE PRODUCTION OF FERTILIZER.**—

"(A) **IN GENERAL.**—In the case of nitric acid, sulfuric acid, ammonia, or methane used to produce ammonia which is a qualified substance, no tax shall be imposed under section 4661(a).

"(B) **QUALIFIED SUBSTANCE.**—For purposes of this section, the term 'qualified substance' means any substance—

"(i) used in a qualified use by the manufacturer, producer, or importer,

"(ii) sold for use by the purchaser in a qualified use, or

"(iii) sold for resale by the purchaser to a second purchaser for use by such second purchaser in a qualified use.

"(C) **QUALIFIED USE.**—For purposes of this subsection, the term 'qualified use' means any use in the manufacture or production of a fertilizer.

"(3) **SULFURIC ACID PRODUCED AS A BYPRODUCT OF AIR POLLUTION CONTROL.**—In the case of sulfuric acid produced solely as a byproduct of and on the same site as air pollution control equipment, no tax shall be imposed under section 4661.

"(4) **SUBSTANCES DERIVED FROM COAL.**—For purposes of this subchapter, the term 'taxable chemical' shall not include any substance to the extent derived from coal.

"(c) **USE BY MANUFACTURER, ETC., CONSIDERED SALE.**—If any person manufactures, produces, or imports a taxable chemical and uses such chemical, then such person shall be liable for tax under section 4661 in the same manner as if such chemical were sold by such person.

"(d) **REFUND OR CREDIT FOR CERTAIN USES.**—

"(1) **IN GENERAL.**—Under regulations prescribed by the Secretary, if—

"(A) a tax under section 4661 was paid with respect to any taxable chemical, and

"(B) such chemical was used by any person in the manufacture or production of any other substance the sale of which by such person would be taxable under such section, then an amount equal to the tax so paid shall be allowed as a credit or refund (without interest) to such person in the same manner as if it were an overpayment of tax imposed by such section. In any case to which this paragraph applies, the amount of any such credit or refund shall not exceed the amount of tax imposed by such section on the other substance manufactured or produced.

"(2) **USE AS FERTILIZER.**—Under regulations prescribed by the Secretary, if—

"(A) a tax under section 4661 was paid with respect to nitric acid, sulfuric acid, ammonia, or methane used to make ammonia without regard to subsection (b)(2), and

"(B) any person uses such substance, or sells such substance for use, as a qualified substance, then an amount equal to the excess of the tax so paid over the tax determined with regard to subsection (b)(2) shall be allowed as a credit or refund (without interest) to such person in the same manner as if it were an overpayment of tax imposed by this section.

"(e) DISPOSITION OF REVENUES FROM PUERTO RICO AND THE VIRGIN ISLANDS.—The provisions of subsections (a)(3) and (b)(3) of section 7652 shall not apply to any tax imposed by section 4661."

26 USC 7652.
Ante. p. 2798.

(b) CLERICAL AMENDMENT.—The table of chapters for subtitle D is amended by inserting after the item relating to chapter 37 the following new item:

"CHAPTER 38. Environmental taxes."

(c) EFFECTIVE DATE.—The amendments made by this section shall take effect on April 1, 1981.

26 USC 4611
note.

Subtitle B—Establishment of Hazardous Substance Response Trust Fund

SEC. 221. ESTABLISHMENT OF HAZARDOUS SUBSTANCE RESPONSE TRUST FUND.

42 USC 9631.

(a) CREATION OF TRUST FUND.—There is established in the Treasury of the United States a trust fund to be known as the "Hazardous Substance Response Trust Fund" (hereinafter in this subtitle referred to as the "Response Trust Fund"), consisting of such amounts as may be appropriated or transferred to such Trust Fund as provided in this section.

(b) TRANSFERS TO RESPONSE TRUST FUND.—

(1) AMOUNTS EQUIVALENT TO CERTAIN TAXES, ETC.—There are hereby appropriated, out of any money in the Treasury not otherwise appropriated, to the Response Trust Fund amounts determined by the Secretary of the Treasury (hereinafter in this subtitle referred to as the "Secretary") to be equivalent to—

(A) the amounts received in the Treasury under section 4611 or 4651 of the Internal Revenue Code of 1954,

Ante. pp. 2797,
2798.

(B) the amounts recovered on behalf of the Response Trust Fund under this Act,

(C) all moneys recovered or collected under section 311(b)(6)(B) of the Clean Water Act,

33 USC 1321.

(D) penalties assessed under title I of this Act, and

(E) punitive damages under section 107(c)(8) of this Act.

(2) AUTHORIZATION FOR APPROPRIATIONS.—There is authorized to be appropriated to the Emergency Response Trust Fund for fiscal year—

(A) 1981, \$44,000,000,

(B) 1982, \$44,000,000,

(C) 1983, \$44,000,000,

(D) 1984, \$44,000,000, and

(E) 1985, \$44,000,000, plus an amount equal to so much of the aggregate amount authorized to be appropriated under subparagraphs (A), (B), (C), and (D) as has not been appropriated before October 1, 1984.

(3) TRANSFER OF FUNDS.—There shall be transferred to the Response Trust Fund—

(A) one-half of the unobligated balance remaining before the date of the enactment of this Act under the Fund in section 311 of the Clean Water Act, and

33 USC 1321.

(B) the amounts appropriated under section 504(b) of the Clean Water Act during any fiscal year.

(c) EXPENDITURES FROM RESPONSE TRUST FUND.—

(1) IN GENERAL.—Amounts in the Response Trust Fund shall be available in connection with releases or threats of releases of hazardous substances into the environment only for purposes of making expenditures which are described in section 111 (other than subsection (j) thereof) of this Act, as in effect on the date of the enactment of this Act, including—

(A) response costs,

(B) claims asserted and compensable but unsatisfied under section 311 of the Clean Water Act,

(C) claims for injury to, or destruction or loss of, natural resources, and

(D) related costs described in section 111(c) of this Act.

(2) LIMITATIONS ON EXPENDITURE.—At least 85 percent of the amounts appropriated to the Response Trust Fund under subsection (b)(1)(A) and (2) shall be reserved—

(A) for the purposes specified in paragraphs (1), (2), and (4) of section 111(a) of this Act, and

(B) for the repayment of advances made under section 223(c), other than advances subject to the limitation of section 223(c)(2)(C).

42 USC 9632

SEC. 222. LIABILITY OF UNITED STATES LIMITED TO AMOUNT IN TRUST FUND.

(a) GENERAL RULE.—Any claim filed against the Response Trust Fund may be paid only out of such Trust Fund. Nothing in this Act (or in any amendment made by this Act) shall authorize the payment by the United States Government of any additional amount with respect to any such claim out of any source other than the Response Trust Fund.

(b) ORDER IN WHICH UNPAID CLAIMS ARE TO BE PAID.—If at any time the Response Trust Fund is unable (by reason of subsection (a) or the limitation of section 221(c)(2)) to pay all of the claims payable out of such Trust Fund at such time, such claims shall, to the extent permitted under subsection (a), be paid in full in the order in which they were finally determined.

42 USC 9633.

SEC. 223. ADMINISTRATIVE PROVISIONS.

(a) METHOD OF TRANSFER.—The amounts appropriated by section 221(b)(1) shall be transferred at least monthly from the general fund of the Treasury to the Response Trust Fund on the basis of estimates made by the Secretary of the amounts referred to in such section. Proper adjustments shall be made in the amount subsequently transferred to the extent prior estimates were in excess of or less than the amounts required to be transferred.

(b) MANAGEMENT OF TRUST FUND.—

(1) REPORT.—The Secretary shall be the trustee of the Response Trust Fund, and shall report to the Congress for each fiscal year ending on or after September 30, 1981, on the financial condition and the results of the operations of such Trust Fund during such fiscal year and on its expected condition and operations during the next 5 fiscal years. Such report shall be printed as a House document of the session of the Congress to which the report is made.

(2) INVESTMENT.—It shall be the duty of the Secretary to invest such portion of such Trust Fund as is not, in his judgment, required to meet current withdrawals. Such investments shall be in public debt securities with maturities suitable for the needs of such Trust Fund and bearing interest at rates determined by the Secretary, taking into consideration current market yields on outstanding marketable obligations of the United States of comparable maturities. The income on such investments shall be credited to and form a part of such Trust Fund.

(c) AUTHORITY TO BORROW.—

(1) IN GENERAL.—There are authorized to be appropriated to the Response Trust Fund, as repayable advances, such sums as may be necessary to carry out the purposes of such Trust Fund.

(2) LIMITATIONS ON ADVANCES TO RESPONSE TRUST FUND.—

(A) AGGREGATE ADVANCES.—The maximum aggregate amount of repayable advances to the Response Trust Fund which is outstanding at any one time shall not exceed an amount which the Secretary estimates will be equal to the sum of the amounts which will be appropriated or transferred to such Trust Fund under paragraph (1)(A) of section 221(b) of this Act for the following 12 months, and

(B) ADVANCES FOR PAYMENT OF RESPONSE COSTS.—No amount may be advanced after March 31, 1983, to the Response Trust Fund for the purpose of paying response costs described in section 111(a) (1), (2), or (4), unless such costs are incurred incident to any spill the effects of which the Secretary determines to be catastrophic.

Appropriation
authorization.

(C) **ADVANCES FOR OTHER COSTS.**—The maximum aggregate amount advanced to the Response Trust Fund which is outstanding at any one time for the purpose of paying costs other than costs described in section 111(a) (1), (2), or (4) shall not exceed one-third of the amount of the estimate made under subparagraph (A).

(D) **FINAL REPAYMENT.**—No advance shall be made to the Response Trust Fund after September 30, 1985, and all advances to such Fund shall be repaid on or before such date.

(3) **REPAYMENT OF ADVANCES.**—Advances made pursuant to this subsection shall be repaid, and interest on such advances shall be paid, to the general fund of the Treasury when the Secretary determines that moneys are available for such purposes in the Trust Fund to which the advance was made. Such interest shall be at rates computed in the same manner as provided in subsection (b) and shall be compounded annually.

Subtitle C—Post-Closure Tax and Trust Fund

SEC. 231. IMPOSITION OF TAX.

(a) **IN GENERAL.**—Chapter 38, as added by section 211, is amended by adding at the end thereof the following new subchapter:

“Subchapter C—Tax on Hazardous Wastes

“Sec. 4681. Imposition of tax.

“Sec. 4682. Definitions and special rules.

“SEC. 4681. IMPOSITION OF TAX.

26 USC 4681.

“(a) **GENERAL RULE.**—There is hereby imposed a tax on the receipt of hazardous waste at a qualified hazardous waste disposal facility.

“(b) **AMOUNT OF TAX.**—The amount of the tax imposed by subsection (a) shall be equal to \$2.13 per dry weight ton of hazardous waste.

“SEC. 4682. DEFINITIONS AND SPECIAL RULES.

26 USC 4682.

“(a) **DEFINITIONS.**—For purposes of this subchapter—

“(1) **HAZARDOUS WASTE.**—The term ‘hazardous waste’ means any waste—

“(A) having the characteristics identified under section 3001 of the Solid Waste Disposal Act, as in effect on the date of the enactment of this Act (other than waste the regulation of which under such Act has been suspended by Act of Congress on that date), or

42 USC 6921.

“(B) subject to the reporting or recordkeeping requirements of sections 3002 and 3004 of such Act, as so in effect.

42 USC 6922, 6924.

“(2) **QUALIFIED HAZARDOUS WASTE DISPOSAL FACILITY.**—The term ‘qualified hazardous waste disposal facility’ means any facility which has received a permit or is accorded interim status under section 3005 of the Solid Waste Disposal Act.

42 USC 6925.

“(b) **TAX IMPOSED ON OWNER OR OPERATOR.**—The tax imposed by section 4681 shall be imposed on the owner or operator of the qualified hazardous waste disposal facility.

“(c) **TAX NOT TO APPLY TO CERTAIN WASTES.**—The tax imposed by section 4681 shall not apply to any hazardous waste which will not remain at the qualified hazardous waste disposal facility after the facility is closed.

“(d) **APPLICABILITY OF SECTION.**—The tax imposed by section 4681 shall apply to the receipt of hazardous waste after September 30, 1983, except that if, as of September 30 of any subsequent calendar year, the unobligated balance of the Post-closure Liability Trust Fund exceeds \$200,000,000, no tax shall be imposed under such section during the following calendar year.”

(b) **CONFORMING AMENDMENT.**—The table of subchapters for chapter 38 is amended by adding at the end thereof the following new item:

“SUBCHAPTER C—Tax on Hazardous Wastes.”

SEC. 232. POST-CLOSURE LIABILITY TRUST FUND.

(a) **CREATION OF TRUST FUND.**—There is established in the Treasury of the United States a trust fund to be known as the "Post-closure Liability Trust Fund", consisting of such amounts as may be appropriated, credited, or transferred to such Trust Fund.

(b) **EXPENDITURES FROM POST-CLOSURE LIABILITY TRUST FUND.**—Amounts in the Post-closure Liability Trust Fund shall be available only for the purposes described in sections 107(k) and 111(j) of this Act (as in effect on the date of the enactment of this Act).

(c) **ADMINISTRATIVE PROVISIONS.**—The provisions of sections 222 and 223 of this Act shall apply with respect to the Trust Fund established under this section, except that the amount of any repayable advances outstanding at any one time shall not exceed \$200,000,000.

TITLE III—MISCELLANEOUS PROVISIONS**REPORTS AND STUDIES**

SEC. 301. (a)(1) The President shall submit to the Congress, within four years after enactment of this Act, a comprehensive report on experience with the implementation of this Act, including, but not limited to—

(A) the extent to which the Act and Fund are effective in enabling Government to respond to and mitigate the effects of releases of hazardous substances;

(B) a summary of past receipts and disbursements from the Fund;

(C) a projection of any future funding needs remaining after the expiration of authority to collect taxes, and of the threat to public health, welfare, and the environment posed by the projected releases which create any such needs;

(D) the record and experience of the Fund in recovering Fund disbursements from liable parties;

(E) the record of State participation in the system of response, liability, and compensation established by this Act;

(F) the impact of the taxes imposed by title II of this Act on the Nation's balance of trade with other countries;

(G) an assessment of the feasibility and desirability of a schedule of taxes which would take into account one or more of the following: the likelihood of a release of a hazardous substance, the degree of hazard and risk of harm to public health, welfare, and the environment resulting from any such release, incentives to proper handling, recycling, incineration, and neutralization of hazardous wastes, and disincentives to improper or illegal handling or disposal of hazardous materials, administrative and reporting burdens on Government and industry, and the extent to which the tax burden falls on the substances and parties which create the problems addressed by this Act. In preparing the report, the President shall consult with appropriate Federal, State, and local agencies, affected industries and claimants, and such other interested parties as he may find useful. Based upon the analyses and consultation required by this subsection, the President shall also include in the report any recommendations for legislative changes he may deem necessary for the better effectuation of the purposes of this Act, including but not limited to recommendations concerning authorization levels, taxes, State participation, liability and liability limits, and financial responsibility provisions for the Response Trust Fund and the Post-closure Liability Trust Fund;

(H) an exemption from or an increase in the substances or the amount of taxes imposed by section 1801 of the Internal Revenue Code of 1954 for copper, lead, and zinc oxide, and for feedstocks when used in the manufacture and production of fertilizers, based upon the expenditure experience of the Response Trust Fund;

(I) the economic impact of taxing coal-derived substances and recycled metals.

(2) The Administrator of the Environmental Protection Agency (in consultation with the Secretary of the Treasury) shall submit to the

Congress (i) within four years after enactment of this Act, a report identifying additional wastes designated by rule as hazardous after the effective date of this Act and pursuant to section 3001 of the Solid Waste Disposal Act and recommendations on appropriate tax rates for such wastes for the Post-closure Liability Trust Fund. The report shall, in addition, recommend a tax rate, considering the quantity and potential danger to human health and the environment posed by the disposal of any wastes which the Administrator, pursuant to subsection 3001(b)(2)(B) and subsection 3001(b)(3)(A) of the Solid Waste Disposal Act of 1980, has determined should be subject to regulation under subtitle C of such Act, (ii) within three years after enactment of this Act, a report on the necessity for and the adequacy of the revenue raised, in relation to estimated future requirements, of the Post-closure Liability Trust Fund.

42 USC 6921.

Ante. p. 2336.

(b) The President shall conduct a study to determine (1) whether adequate private insurance protection is available on reasonable terms and conditions to the owners and operators of vessels and facilities subject to liability under section 107 of this Act, and (2) whether the market for such insurance is sufficiently competitive to assure purchasers of features such as a reasonable range of deductibles, coinsurance provisions, and exclusions. The President shall submit the results of his study, together with his recommendations, within two years of the date of enactment of this Act, and shall submit an interim report on his study within one year of the date of enactment of this Act.

Ante. p. 2781.

(c)(1) The President, acting through Federal officials designated by the National Contingency Plan published under section 105 of this Act, shall study and, not later than two years after the enactment of this Act, shall promulgate regulations for the assessment of damages for injury to, destruction of, or loss of natural resources resulting from a release of oil or a hazardous substance for the purposes of this Act and section 311(f) (4) and (5) of the Federal Water Pollution Control Act.

Regulations.

Ante. p. 2779.

(2) Such regulations shall specify (A) standard procedures for simplified assessments requiring minimal field observation, including establishing measures of damages based on units of discharge or release or units of affected area, and (B) alternative protocols for conducting assessments in individual cases to determine the type and extent of short- and long-term injury, destruction, or loss. Such regulations shall identify the best available procedures to determine such damages, including both direct and indirect injury, destruction, or loss and shall take into consideration factors including, but not limited to, replacement value, use value, and ability of the ecosystem or resource to recover.

33 USC 1321.

(3) Such regulations shall be reviewed and revised as appropriate every two years.

Review and revision.

(d) The Administrator of the Environmental Protection Agency shall, in consultation with other Federal agencies and appropriate representatives of State and local governments and nongovernmental agencies, conduct a study and report to the Congress within two years of the date of enactment of this Act on the issues, alternatives, and policy considerations involved in the selection of locations for hazardous waste treatment, storage, and disposal facilities. This study shall include—

(A) an assessment of current and projected treatment, storage, and disposal capacity needs and shortfalls for hazardous waste by management category on a State-by-State basis;

(B) an evaluation of the appropriateness of a regional approach to siting and designing hazardous waste management facilities and the identification of hazardous waste management regions, interstate or intrastate, or both, with similar hazardous waste management needs;

(C) solicitation and analysis of proposals for the construction and operation of hazardous waste management facilities by nongovernmental entities, except that no proposal solicited under terms of this subsection shall be analyzed if it involves cost to the United States Government or fails to comply with the requirements of subtitle C of the Solid Waste Disposal Act and other applicable provisions of law;

42 USC 6921.

(D) recommendations on the appropriate balance between public and private sector involvement in the siting, design, and operation of new hazardous waste management facilities;

(E) documentation of the major reasons for public opposition to new hazardous waste management facilities; and

(F) an evaluation of the various options for overcoming obstacles to siting new facilities, including needed legislation for implementing the most suitable option or options.

(e)(1) In order to determine the adequacy of existing common law and statutory remedies in providing legal redress for harm to man and the environment caused by the release of hazardous substances into the environment, there shall be submitted to the Congress a study within twelve months of enactment of this Act.

(2) This study shall be conducted with the assistance of the American Bar Association, the American Law Institute, the Association of American Trial Lawyers, and the National Association of State Attorneys General with the President of each entity selecting three members from each organization to conduct the study. The study chairman and one reporter shall be elected from among the twelve members of the study group.

(3) As part of their review of the adequacy of existing common law and statutory remedies, the study group shall evaluate the following:

(A) the nature, adequacy, and availability of existing remedies under present law in compensating for harm to man from the release of hazardous substances;

(B) the nature of barriers to recovery (particularly with respect to burdens of going forward and of proof and relevancy) and the role such barriers play in the legal system;

(C) the scope of the evidentiary burdens placed on the plaintiff in proving harm from the release of hazardous substances, particularly in light of the scientific uncertainty over causation with respect to—

(i) carcinogens, mutagens, and teratogens, and

(ii) the human health effects of exposure to low doses of hazardous substances over long periods of time;

(D) the nature and adequacy of existing remedies under present law in providing compensation for damages to natural resources from the release of hazardous substances;

(E) the scope of liability under existing law and the consequences, particularly with respect to obtaining insurance, of any changes in such liability;

(F) barriers to recovery posed by existing statutes of limitations.

(4) The report shall be submitted to the Congress with appropriate recommendations. Such recommendations shall explicitly address—

(A) the need for revisions in existing statutory or common law, and

(B) whether such revisions should take the form of Federal statutes or the development of a model code which is recommended for adoption by the States.

(5) The Fund shall pay administrative expenses incurred for the study. No expenses shall be available to pay compensation, except expenses on a per diem basis for the one reporter, but in no case shall the total expenses of the study exceed \$300,000.

(f) The President, acting through the Administrator of the Environmental Protection Agency, the Secretary of Transportation, the Administrator of the Occupational Safety and Health Administration, and the Director of the National Institute for Occupational Safety and Health shall study and, not later than two years after the enactment of this Act, shall modify the national contingency plan to provide for the protection of the health and safety of employees involved in response actions.

EFFECTIVE DATES, SAVINGS PROVISION

SEC. 302. (a) Unless otherwise provided, all provisions of this Act shall be effective on the date of enactment of this Act.

(b) Any regulation issued pursuant to any provisions of section 311 of the Clean Water Act which is repealed or superseded by this Act and which is in effect on the date immediately preceding the effective date of this Act shall be deemed to be a regulation issued pursuant to the authority of this Act and shall remain in full force and effect unless or until superseded by new regulations issued thereunder.

33 USC 1321.

(c) Any regulation—

(1) respecting financial responsibility,

(2) issued pursuant to any provision of law repealed or superseded by this Act, and

(3) in effect on the date immediately preceding the effective date of this Act shall be deemed to be a regulation issued pursuant to the authority of this Act and shall remain in full force and effect unless or until superseded by new regulations issued thereunder.

(d) Nothing in this Act shall affect or modify in any way the obligations or liabilities of any person under other Federal or State law, including common law, with respect to releases of hazardous substances or other pollutants or contaminants. The provisions of this Act shall not be considered, interpreted, or construed in any way as reflecting a determination, in part or whole, of policy regarding the inapplicability of strict liability, or strict liability doctrines, to activities relating to hazardous substances, pollutants, or contaminants or other such activities.

EXPIRATION, SUNSET PROVISION

SEC. 303. Unless reauthorized by the Congress, the authority to collect taxes conferred by this Act shall terminate on September 30, 1985, or when the sum of the amounts received in the Treasury under section 4611 and under 4661 of the Internal Revenue Code of 1954 total \$1,380,000,000, whichever occurs first. The Secretary of the Treasury shall estimate when this level of \$1,380,000,000 will be reached and shall by regulation, provide procedures for the termination of the tax authorized by this Act and imposed under sections 4611 and 4661 of the Internal Revenue Code of 1954.

42 USC 9653.

Ante. pp 2797, 2799.

CONFORMING AMENDMENTS

SEC. 304. (a) Subsection (b) of section 504 of the Federal Water Pollution Control Act is hereby repealed.

33 USC 1364.

(b) One-half of the unobligated balance remaining before the date of the enactment of this Act under subsection (k) of section 311 of the Federal Water Pollution Control Act and all sums appropriated under section 504(b) of the Federal Water Pollution Control Act shall be transferred to the Fund established under title II of this Act.

42 USC 9654.

33 USC 1321.

(c) In any case in which any provision of section 311 of the Federal Water Pollution Control Act is determined to be in conflict with any provisions of this Act, the provisions of this Act shall apply.

LEGISLATIVE VETO

SEC. 305. (a) Notwithstanding any other provision of law, simultaneously with promulgation or repromulgation of any rule or regulation under authority of title I of this Act, the head of the department, agency, or instrumentality promulgating such rule or regulation shall transmit a copy thereof to the Secretary of the Senate and the Clerk of the House of Representatives. Except as provided in subsection (b) of this section, the rule or regulation shall not become effective, if—

42 USC 9655.

(1) within ninety calendar days of continuous session of Congress after the date of promulgation, both Houses of Congress adopt a concurrent resolution, the matter after the resolving clause of which is as follows: "That Congress disapproves the rule or regulation promulgated by the _____ dealing with the matter of _____, which rule or regulation was transmitted to Congress on _____", the blank spaces therein being appropriately filled; or

(2) within sixty calendar days of continuous session of Congress after the date of promulgation, one House of Congress adopts such a concurrent resolution and transmits such resolution to the other House, and such resolution is not disapproved by such other House within thirty calendar days of continuous session of Congress after such transmittal.

(b) If, at the end of sixty calendar days of continuous session of Congress after the date of promulgation of a rule or regulation, no committee of either House of Congress has reported or been discharged from further consideration of a concurrent resolution disapproving the rule or regulation and neither House has adopted such a resolution, the rule or regulation may go into effect immediately. If, within such sixty calendar days, such a committee has reported or been discharged from further consideration of such a resolution, or either House has adopted such a resolution, the rule or regulation may go into effect not sooner than ninety calendar days of continuous session of Congress after such rule is prescribed unless disapproved as provided in subsection (a) of this section.

(c) For purposes of subsections (a) and (b) of this section—

(1) continuity of session is broken only by an adjournment of Congress sine die; and

(2) the days on which either House is not in session because of an adjournment of more than three days to a day certain are excluded in the computation of thirty, sixty, and ninety calendar days of continuous session of Congress.

(d) Congressional inaction on, or rejection of, a resolution of disapproval shall not be deemed an expression of approval of such rule or regulation.

TRANSPORTATION

42 USC 9656.
Ante, p. 2767.

Sec. 306. (a) Each hazardous substance which is listed or designated as provided in section 101(14) of this Act shall, within ninety days after the date of enactment of this Act or at the time of such listing or designation, whichever is later, be listed as a hazardous material under the Hazardous Materials Transportation Act.

49 USC 1801
note.
Ante, p. 2781.

(b) A common or contract carrier shall be liable under other law in lieu of section 107 of this Act for damages or remedial action resulting from the release of a hazardous substance during the course of transportation which commenced prior to the effective date of the listing of such substance as a hazardous material under the Hazardous Materials Transportation Act, or for substances listed pursuant to subsection (a) of this section, prior to the effective date of such listing: *Provided, however*, That this subsection shall not apply where such a carrier can demonstrate that he did not have actual knowledge of the identity or nature of the substance released.

(c) Section 11901 of title 49, United States Code, is amended by—

(1) redesignating subsection (h) as subsection (i);

(2) by inserting "and subsection (h)" after "subsection (g)" in subsection (ix)(2) as so redesignated by paragraph (1) of this subsection; and

(3) by inserting the following new subsection (h):

49 USC 10541.

"(h) A person subject to the jurisdiction of the Commission under subchapter II of chapter 105 of this title, or an officer, agent, or employee of that person, and who is required to comply with section 10921 of this title but does not so comply with respect to the transportation of hazardous wastes as defined by the Environmental Protection Agency pursuant to section 3001 of the Solid Waste Disposal Act (but not including any waste the regulation of which under the Solid Waste Disposal Act has been suspended by Congress) shall, in any action brought by the Commission, be liable to the United States for a civil penalty not to exceed \$20,000 for each violation."

ASSISTANT ADMINISTRATOR FOR SOLID WASTE

42 USC 6911.

Sec. 307. (a) Section 2001 of the Solid Waste Disposal Act is amended by striking out "a Deputy Assistant" and inserting in lieu thereof "an Assistant".

(b) The Assistant Administrator of the Environmental Protection Agency appointed to head the Office of Solid Waste shall be in addition to the five Assistant Administrators of the Environmental Protection Agency provided for in section 1(d) of Reorganization Plan Numbered 3 of 1970 and the additional Assistant Administrator provided by the Toxic Substances Control Act, shall be appointed by the President by and with the advice and consent of the Senate, and shall be compensated at the rate provided for Level IV of the Executive Schedule pay rates under section 5315 of title 5, United States Code.

42 USC 6911a.

5 USC app: 42
USC 4321 note.
15 USC 2601
note Effective
date.

(c) The amendment made by subsection (a) shall become effective ninety days after the date of the enactment of this Act.

42 USC 6911
note.

SEPARABILITY

Sec. 308. If any provision of this Act, or the application of any provision of this Act to any person or circumstance, is held invalid, the application of such provision to other persons or circumstances and the remainder of this Act shall not be affected thereby.

42 USC 9657.

Approved December 11, 1980.

LEGISLATIVE HISTORY:

HOUSE REPORTS: No. 96-1016, pt. I (Comm. on Interstate and Foreign Commerce) and No. 96-1016, Pt. II (Comm. on Ways and Means).

SENATE REPORT No. 96-848 accompanying S. 1480 (Comm. on Environment and Public Works).

CONGRESSIONAL RECORD, Vol. 126 (1980):

Sept. 18, 19, 23, considered and passed House.

Nov. 24, considered and passed Senate, amended, in lieu of S. 1480.

Dec. 3, House concurred in Senate amendments.

WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 16, No. 50:

Dec. 11, Presidential statement.

HAZARDOUS MATERIALS

DATA SOURCES

I. MATTER INCORPORATED BY REFERENCE

The following sources are listed as sources of Matter Incorporated by Reference.

The Aluminum Association
420 Lexington Avenue
New York, New York 10017

American Iron and Steel Institute
1000 - 16th Street, NW
Washington, D.C. 20036

PH: (202) 452-7261

American Petroleum Institute
(API)
1801 K Street, NW
Washington, D.C. 20006

PH: (202) 833-5710

The Chlorine Institute
342 Madison Avenue
New York, New York 10017

The Fertilizer Institute (TFI)
1015 - 18th Street, NW
Washington, D.C. 20036

PH: (202) 466-2700

Manufacturing Chemists
Association, Inc. (MCA)
1825 Connecticut Avenue, NW
Washington, D.C. 20009

PH: (202) 482-6126

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

United States Energy Research
and Development Administration
(USERDA)
Washington, D.C. 20545

United States Nuclear Regulatory
Commission (USNRC)
Washington, D.C. 20555

II. TRAINING AND INFORMATIONAL DATA

A number of companies, governmental agencies, and trade associations provide materials which are designed to assist persons involved in hazardous materials to understand the nature of specific materials and to comply with the Hazardous Materials Regulations of the Department of Transportation.

Many booklets, publications, pamphlets are available and are helpful in meeting employee training obligations under the law. Listed below are such materials with the name of the source company; complete address listings appear at the end of this training and informational data.

LIST OF TRAINING AND INFORMATIONAL DATA

ACCIDENT PREVENTION MANUAL NO. 13, CLEANING MOBILE TANKS USED FOR TRANSPORTATION OF FLAMMABLE LIQUIDS-SECTION B, TANK CARS provides information on how to prepare safely for removal from service, or for repair, any tank car which has been used for the transportation of flammable liquids. (American Petroleum Institute)

AFTER ACCIDENT PROCEDURE (publication No. 202-60) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

AGENTS, METHODS AND DEVICES FOR AMELIORATION OF DISCHARGES OF HAZARDOUS CHEMICALS ON WATER - Identification and evaluation of chemical agents and methods advantageous for the amelioration of discharges of 30 representative chemicals on water. (National Technical Information Service)

AIR FREIGHT GUIDE FOR HAZARDOUS MATERIALS-A 32-page booklet prepared from a shipper's point of view to give practical information on how to use all the Restricted Articles regulations. (The Flying Tiger Line)

THE AMERICAN TABLE OF DISTANCES - 13-page technical booklet on the safe storage of explosives. (Institute of Makers of Explosives)

AN INDEX TO THE HAZARDOUS MATERIALS REGULATIONS provides quick reference to particular hazardous materials regulations. (Department of Transportation)

ANALYSIS OF FINDINGS OF FOUR TANK CAR ACCIDENT REPORTS - Report on findings of tests conducted on samples of tank car materials of cars involved in accidents. (National Technical Information Service)

II. TRAINING AND INFORMATIONAL DATA, Cont.

CHLORINE MANUAL contains basic information including properties and physiological effects of chlorine, description and rules for handling chlorine containers, emergency measures and first aid, and chemical and physical characteristics. (The Chlorine Institute)

CLASSIFICATION OF OXIDIZERS AND FLAMMABLE SOLIDS, PHASE III - Research report. (National Technical Information Service)

CLEANING TANK VEHICLES USED FOR TRANSPORTATION OF FLAMMABLE LIQUIDS describes measures which should be taken to protect personnel against harmful vapor concentrations and to avoid the ignition of flammable vapors during tank vehicle cleaning operations. (American Petroleum Institute)

COMMERCIAL ORGANIC PEROXIDE - Basic reference document on toxicity data for organic peroxides. (Society of the Plastics Industry)

COMPRESSED GAS CYLINDER FILLING PROCEDURES - Emphasizes the importance of complying with the Hazardous Materials Regulations of the DOT in connection with obtaining the owners consent before charging compressed gas cylinders; single page. (Compressed Gas Association, Inc.)

CONTAINER PROCEDURE FOR CHLORINE PACKAGING - Suggests procedures for inspection, testing, cleaning and loading of cylinders and ton containers. (The Chlorine Institute)

DANGER - HIGH EXPLOSIVES - Poster 8-1/2 x 11. (Institute of Makers of Explosives)

DANGER! BEWARE OF TIRE FIRES - Pamphlet for truck cabs when hauling explosives. (Institute of Makers of Explosives)

DON'T FIGHT EXPLOSIVES FIRES! - Poster. (Institute of Makers of Explosives)

DRIVER IMPROVEMENT COURSE - is a 4-hour course designed to cover basic factors involved in routine driving, determine principal causes of motor vehicle accidents, and present safe practices by which these accidents can be eliminated. (American Petroleum Institute)

DRIVER'S GUIDE FOR OPERATION LP-GAS VEHICLES (publication No. 109-72) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

DRIVER SELECTION AND TRAINING GUIDE points out that safety in the transportation and handling of flammable liquids by tank truck is a vital concern to every segment of the petroleum industry. It indicates methods by which the industry through careful selection and training can obtain qualified tank truck drivers to handle and transport flammable liquids safely. (American Petroleum Institute)

II. TRAINING AND INFORMATIONAL DATA, Cont.

ANALYSIS OF RISK IN THE WATER TRANSPORTATION OF HAZARDOUS MATERIALS - A report of an assessment of the utility and feasibility of risk analysis as a set of techniques for assisting management decisions regarding the regulation of water transportation of hazardous materials. (National Technical Information Service)

BASIC CLASSIFICATION OF FLAMMABLE AND COMBUSTIBLE LIQUIDS (NFPA 321) - Standard terms of flash and boiling points. (National Fire Protection Association)

BULK CARRIERS OPERATIONS SAFETY ENHANCEMENT PROJECT, PHASE I - Features scale modeling methods for studying liquid petroleum cargo ship tank electrostatics, washing and atmosphere control phenomena. (National Technical Information Service)

BULLETIN ON QUICK COUPLING (publication No. 121-66) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

BULLETIN ON TESTING OF EXCESS FLOW CHECK VALVES (publication No. 113-55) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

CARGO TANKS AND FITTINGS (publication No. 120-69) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

CHECK YOUR LP-GAS REGULATOR! (publication No. 124-72) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

THE CHEMICAL HAZARDS RESPONSE INFORMATION SYSTEM (CHRIS) - Official publication of the U.S. Coast Guard, containing four volumes: A Condensed Guide To Chemical Hazards; Hazardous Chemical Data; Hazard Assessment Handbook; Response Methods Handbook. (National Technical Information Service)

CHLORINE FACTS - This presents a quick summary of chlorine's history, manufacturing processes, locations of production and packaging plants, shipping and safety practices. (The Chlorine Institute)

CHLORINE INSTITUTE EMERGENCY KIT "A" FOR 100-LB & 150-LB CHLORINE CYLINDERS - INSTRUCTION BOOKLET - Provides instructions and illustrates the use of Chlorine Institute Emergency Kit "A". Includes complete parts list. (The Chlorine Institute)

CHLORINE INSTITUTE EMERGENCY KIT "B" FOR TON CONTAINERS - INSTRUCTION BOOKLET - Provides instructions and illustrates the use of Chlorine Institute Emergency Kit "B". Includes complete parts lists. (The Chlorine Institute)

CHLORINE INSTITUTE EMERGENCY KIT "C" FOR TANK CARS & TANK TRUCKS - INSTRUCTION BOOKLET - Provides instructions and illustrates the use of Chlorine Institute Emergency Kit "C". Includes complete parts list. (The Chlorine Institute)

REFERENCE DATA

II. TRAINING AND INFORMATIONAL DATA, Cont.

DRIVER'S HANDBOOK, 1972 is a vest-pocket handbook measuring 3-1/2" x 6" - intended as a practical guide for the drivers of petroleum tank trucks; includes public relations, driver attitudes and care, maintenance and service of motor vehicle equipment; also includes product knowledge, road emergencies, delivery procedures, fire protection and traffic accidents. (American Petroleum Institute)

EMERGENCY HANDLING OF RADIATION ACCIDENT CASES - A series of six booklets specifically written for ambulance-rescue squads, police, hospital administration, sheriffs, physicians, and nurses. (Energy Research and Development Administration)

EMERGENCY SERVICES GUIDE FOR SELECTED HAZARDOUS MATERIALS - A guide to appropriate actions to minimize the hazard impact of spills of hazardous materials. (Department of Transportation)

EVERYTHING YOU ALWAYS WANTED TO KNOW ABOUT SHIPPING HIGH LEVEL NUCLEAR WASTES - 49-page booklet featuring questions and answers on the transportation of high-level nuclear wastes. (Energy Research and Development Administration)

EXCESS FLOW VALVES NEEDED FOR TANK CAR UNLOADING ADAPTORS (publication No. 116-68) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

FEDERAL MOTOR CARRIER SAFETY REGULATIONS POCKETBOOK (ORS-7A) - A driver's item featuring FMCS regulations and a special compendium of Hazardous Materials Regulations to familiarize drivers with their responsibility. (J. J. Kellers & Associates, Inc.)

FIFTH ANNUAL REPORT of the Secretary of Transportation on Hazardous Materials Control for calendar year 1974. (Superintendent of Documents)

FIRE PROTECTION GUIDE ON HAZARDOUS MATERIALS includes flash points of more than 8,800 Trade Name products, data for chemicals on fire, explosion and toxicity hazards and the recommended system for identifying the severity of the health, flammability, and reactivity hazards of materials. (National Fire Protection Association)

FIRST AID FOR PROPANE FREEZES (publication No. 103-69) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

FLAMMABLE & COMBUSTIBLE LIQUIDS CODE (NFPA 30) - Tank storage, piping, valves and fittings, container storage, industrial plants, bulk plants, service stations, processing plants. (National Fire Protection Association)

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HAZARDOUS MATERIALS

II. TRAINING AND INFORMATIONAL DATA, Cont.

FOURTH ANNUAL REPORT of the Secretary of Transportation on Hazardous Materials Control - report for calendar year 1973. (Department of Transportation)

GUIDE TO HOSE INSPECTION (publication No. 114-65) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

HANDBOOK OF COMPRESSED GASES - Includes safe handling of compressed gases, cargo and portable tanks, compressed gas containers, how to receive and unload liquified compressed gases. Fully illustrated with tables, charts and diagrams. (Compressed Gas Association, Inc.)

HANDBOOK OF REACTIVE CHEMICAL HAZARDS - A 976-page handbook features chemical reactivity hazards associated with over 4,000 elements, compounds and combinations. (CRC Press, Inc.)

HANDBOOK OF HAZARDOUS MATERIALS 1974 (American Mutual Insurance Alliance)

HANDLING CHLORINE TANK MOTOR VEHICLES - Contains general information useful to anyone concerned with chlorine in tank trucks. Includes information on driver qualifications and vehicle routing, loading, in-transit and unloading practices; excerpts of pertinent DOT Regulations; tank truck loading check list; and, emergency instruction card. (The Chlorine Institute)

HANDLING HAZARDOUS MATERIALS - 14-page booklet issued as part of the "Safe Work Practices Series"; OSHA 2237. (Occupational Safety and Health Administration)

HAZARD INFORMATION IN TRANSPORTATION provides information on the Union Carbide Proposal for identifying cargo hazards. (Union Carbide Corporation)

HAZARDOUS COMMODITY HANDBOOK - A compilation of commodities suitable for bulk transportation - features governing regulations, specification cargo tanks and special DOT requirements. (National Tank Truck Carriers Inc.)

HAZARDOUS MATERIALS, Transportation Regulations at Tunnel and Bridge Facilities - An 81-page booklet for users of tunnels and bridges operated by the Port Authority of New York and New Jersey. (The Port Authority of NY and NJ)

HAZARDOUS MATERIALS COMMODITY LIST features U. N. and U. S. classification, shipping labels, label to placard chart - pocket digest. (Labelmaster)

HAZARDOUS MATERIALS - EMERGENCY ACTION GUIDE - General and specific safety procedures to assist emergency service personnel. (National Highway Traffic Safety Administration)

REFERENCE DATA

II. TRAINING AND INFORMATIONAL DATA, Cont.

HAZARDOUS MATERIALS GUIDEBOOK emphasizes DOT requirements and standard operating procedures for the systematic handling of hazardous freight, bills and equipment. (American Trucking Associations, Inc.)

HAZARDOUS MATERIALS REGULATIONS INDEX provides quick reference to particular hazardous materials regulations. (Hazardous Material Publishing Company)

HAZARDOUS MATERIALS SEMINAR & WORKSHOP - Proceedings of a summary report of a January 1975 seminar. (Hazardous Materials Advisory Committee)

HAZARDOUS MATERIALS TANK CARS - EVALUATION OF TANK CAR SHELL CONSTRUCTION MATERIAL - Reports on a metallurgical analysis of a steel plate sample taken from a tank car involved in an accident. (National Technical Information Service)

HAZARDOUS MATERIALS TRANSPORTATION - The transportation of explosives, rocket propellants, chemical warfare agents, industrial chemicals, liquified natural gas, chlorine, and other hazardous materials are covered in this bibliography which contains 126 abstracts. All means of transportation are described. Accidents, economics, and statistics are also included in this report - NTIS/PS-75/286/5WT. (National Technical Information Service)

HAZARDOUS MATERIALS TRANSPORTATION, PART 2, Radioactive Materials and Wastes - Bibliography of Federally funded research on radioactive wastes and materials. (National Technical Information Service)

HIGHWAY TRANSPORTATION OF HAZARDOUS MATERIALS IN VIRGINIA - A report of a survey of trucks transporting hazardous materials in and through the state. (Highway Safety Division of Virginia)

HOW TO CONTROL LP-GAS LEAKS AND FIRES (publication No. 200-73) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

HOW TO DESTROY EXPLOSIVES (publication No. 21) - Procedures for destroying electric blasting caps, primers and boosters, etc. (Institute of Makers of Explosives)

HOW TO HANDLE FLAMMABLE LIQUIDS SAFELY is designed to aid in the prevention of fires and the resulting losses of life and property that frequently result from the ignition of combustible and flammable liquids. (Justrite Manufacturing Company)

HOW TO STAGE LP-GAS FIRE CONTROL DEMONSTRATIONS (publication No. 201-62) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

REFERENCE DATA

II. TRAINING AND INFORMATIONAL DATA, Cont.

IME STANDARD FOR THE SAFE TRANSPORTATION OF ELECTRIC BLASTING CAPS IN THE SAME VEHICLE WITH OTHER EXPLOSIVES - 9 page booklet. (Institute of Makers of Explosives)

IMPACT PROPERTIES OF STEELS TAKEN FROM FOUR FAILED TANK CARS - Includes results and metallurgical analyses of findings of impact tests conducted on samples taken from tank cars involved in service accidents. (National Technical Information Service)

INSTALLATION AND USE OF PROPANE CARGO HEATERS (publication No. 607-72) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

JOURNAL OF HAZARDOUS MATERIALS - Quarterly publication dealing with all aspects of hazardous materials. (Elsevier Scientific Publishing Company)

LABELING OF HAZARDOUS INDUSTRIAL CHEMICALS - ANSI Standard No. Z 129.1 outlines a new standard for the labeling of hazardous industrial chemicals. (American National Standards Institute)

LOCATION OF CHLORINE EMERGENCY KITS - Location and identity of chlorine emergency kits for cylinders, ton containers, tank cars and tank trucks. (The Chlorine Institute)

LP-GAS CONTAINER INSTALLATION SPACING CHART (publication No. 305-58) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

LP GAS SAFETY PROPOSED "CANNED TALK" (publication No. 301-72) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

LOCK 'EM UP - Poster on blasting caps. (Institute of Makers of Explosives)

THE MAINTENANCE OF PUMPS AND COMPRESSORS (publication No. 119-70) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

METHYL ETHYL KETONE PEROXIDES - Chart identifying procedures in case of fire, first aid actions, storage advice and handling procedures. (Society of the Plastics Industry)

NLPGA, SAFETY HANDBOOK is a compilation of all bulletins and pamphlets issued by the Association over the past 12 years. Featured: Driver's Guide For Operating LP-Gas Vehicles; Visual Inspection of ICC Cylinders in LP-Gas Service-Chart; 21 Checks for Tank Trucks and Trailers; Proper Procedures for Filling Testing Cylinders; After Accident Procedure; Installation and Use of Propane Cargo Heaters. Individual copies of bulletin also available. (National LP-Gas Association)

II. TRAINING AND INFORMATIONAL DATA, Cont.

NUMBER ONE POWER TOOL - 5-page pamphlet on explosives. (Institute of Makers of Explosives.)

OPERATION AND INSTALLATION OF LP-GAS HOVER TYPE BROODERS (publication No. 502-73) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

PORTABLE SHIPPING TANKS (NFPA 386) - Standard for transportation of flammable and combustible liquids in tanks of larger than 60 gallons and up to 660 with flash point below 200° F. (National Fire Protection Association)

PROCEDURES FOR PLACING INTERCHANGEABLE ANHYDROUS AMMONIA & LP-GAS BULK TANKS INTO LP-GAS SERVICE (publication No. 123-71) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

PROCEDURES FOR THE USE OF LP-GAS AT PLACES OF PUBLIC ASSEMBLY (publication No. 800-72) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

PROPER PROCEDURES FOR FILLING, TESTING CYLINDERS (publication No. 104-70) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

RECOMMENDATIONS FOR PREVENTION OF AMMONIA CONTAMINATION OF LP-GAS (publication No. 122-70) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

RECOMMENDED PROCEDURES FOR VISUAL INSPECTION AND REQUALIFICATION OF ICC CYLINDERS IN LP-GAS SERVICE (publication No. 118-67) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

RECOMMENDED SYSTEM FOR THE IDENTIFICATION OF THE FIRE HAZARDS OF MATERIALS (NFPA 704M) - Key method to mark containers indicating the reactivity, flammability, and health hazards of materials in storage. (National Fire Protection Association)

RESTRICTED ARTICLES TERMINAL SIGN - A 24" x 36" wall chart depicting DOT shipping labels in full color. (Labelmaster)

A REVIEW OF THE DOT REGULATIONS FOR TRANSPORTATION OF RADIOACTIVE MATERIALS features background data, summary of regulations, shipper requirements, and carrier responsibility. (Department of Transportation)

II. TRAINING AND INFORMATIONAL DATA, Cont.

SAFE HANDLING OF CHLORINE CONTAINERS - WALL CHART - Contains recommendations for safe handling of chlorine cylinders and ton containers, emergency procedures and applicable principles of first aid. The chart, measuring 12-1/2" x 23", is varnished and grommited to facilitate hanging. (The Chlorine Institute)

SAFE HANDLING OF LP-GAS AT STATIONARY DISPENSERS (publication No. 107-66) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

SAFE PRACTICES AROUND LP-GAS INSTALLATIONS (publication No. 100-63) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

SAFE USE OF LP-GAS CYLINDERS IN OUTSIDE INDUSTRIAL APPLICATIONS (publication No. 699-71) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

SAFE USE OF LP-GAS WITH PORTABLE CYLINDERS FOR CUTTING, BRAZING (publication No. 606-73) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

SAFETY AND LOSS PREVENTION BULLETINS - Periodic report prepared by the Organic Peroxide Producers Safety Division. (Society of Plastics Industries)

SAFETY CONSIDERATIONS IN TRUCK DELIVERIES (publication No. 111-69) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

SAFETY HINTS FOR USING FLEXIBLE CONNECTORS (publication No. 115-67) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

SAFETY IN THE TRANSPORTATION, STORAGE, HANDLING AND USE OF EXPLOSIVES - Safety Library Publication No. 17. (Institute of Makers of Explosives)

SAFETY MANUAL FOR HANDLING AND WAREHOUSING CLASS B POISON PESTICIDES - Booklet covering poison product containers, handling and storage, labels, health hazards, etc. (National Agricultural Chemicals Association)

SHIPMENTS OF RADIOACTIVE MATERIALS over toll roads, bridges, and tunnels is a compendium of regulations outlining basic data concerning restrictions placed on radioactive shipments over bridges and toll roads and through tunnels. (International Bridge Tunnel and Turnpike Association, Inc.)

SHIPPING HIGH-LEVEL NUCLEAR WASTES, Everything You Always Wanted To Know About. (Energy Research and Development Administration)

II. TRAINING AND INFORMATIONAL DATA, Cont.

SHIPPING OF NUCLEAR WASTES - 9-page booklet outlining general data on a nuclear waste shipment. (Energy Research and Development Administration)

SIXTH ANNUAL REPORT of the Secretary of Transportation on Hazardous Materials Control for Calendar Year 1975. (Superintendent of Documents)

SPONTANEOUSLY COMBUSTIBLE SOLIDS - A literature survey research report. (National Technical Information Service)

STANDARDS FOR DRIVER-ATTENDED LOADING OF ANHYDROUS AMMONIA - A booklet containing the approved American National Standards Institute (ANSI K61-1 - 1972) standard. (The Fertilizer Institute)

STORAGE OF LIQUID AND SOLID OXIDIZING MATERIALS - ANSI Standard Z 290.1 - 1976. (American National Standards Institute)

A STUDY OF STRESS CORROSION PHENOMENA RESULTING FROM TRANSPORTATION OF ANHYDROUS AMMONIA IN QUENCHED-AND-TEMPERED STEEL CARGO TANKS - Reviews the primary causative agent of stress-corrosion cracking of quenched and tempered steels. (National Technical Information Service)

SUGGESTED CODE OF REGULATIONS for the manufacture, transportation, storage, sale, possession and use of explosive materials - 59 page booklet. (Institute of Makers of Explosives)

SUGGESTED REGULATOR AND VALVE MAINTENANCE (publication No. 306-71) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

SUGGESTED RELATIVE HAZARD CLASSIFICATION OF ORGANIC PEROXIDES - An advisory bulletin concerning the shipping and storing of organic peroxides. (Society of the Plastics Industry)

TAILGATE TALKS - GARAGING AND PARKING YOUR TANK TRUCK (publication No. 304-68) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

TANK TRUCK FLEXIBLE CONNECTOR INSPECTION & REPLACEMENT (publication No. 125-73) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

TANK VEHICLES FOR FLAMMABLE AND COMBUSTIBLE LIQUIDS (NFPA 385) - Recommendations for design, construction, operation. (National Fire Protection Association)

REFERENCE DATA

II. TRAINING AND INFORMATIONAL DATA, Cont.

TEMPORARY SPACE HEATING WITH PORTABLE CONTAINERS (publication No. 605-66) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

THE TRANSPORTATION OF HAZARDOUS MATERIALS - 95-page report on the problem involved in the transportation of hazardous materials with emphasis on the transport of benzene by railroad. (National Technical Information Service)

TRUCK MAINTENANCE (publication No. 112-71) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

TRUCKING SAFETY GUIDE - Featuring a special appendix on Hazardous Materials regulations for common, contract and private carriers - also each state's regulations on the transportation of hazardous materials. (J. J. Keller & Associates, Inc.)

21 CHECKS FOR TANK TRUCKS AND TRAILERS (publication No. 110-58) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

VISUAL INSPECTION OF CHLORINE TON CONTAINERS - A guide to container users for establishing inspection procedures and standards for periodic container inspection. (The Chlorine Institute)

VISUAL INSPECTION OF ICC CYLINDERS IN LP-GAS SERVICE - CHART (publication No. 117-68) - Pamphlet from the NLPGA Safety Handbook. (National L-P Gas Association)

BOOKS AND PAMPHLETS

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- CHEMICAL SCREENING: INITIAL EVALUATIONS OF SUBSTANTIAL RISK NOTICES, SECTION 8(e), JANUARY 1, 1977 TO JUNE 30, 1979** — TSCA Chemical Assessment Series, IAO, EPA Office of Pesticides and Toxic Substances, 401 M St., S.W., Washington, D.C. 20460.
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- CLEANING OR SAFEGUARDING SMALL TANKS AND CONTAINERS (327)**, National Fire Protection Association, 470 Atlantic Ave., Boston, Mass. 02210, 1975.
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- CHEMISTRY LABORATORY SAFETY LIBRARY (No. RL-CLs)**, Collection of 12 NFPA standards, National Fire Protection Association, 470 Atlantic Ave., Boston, Mass.
- DAMAGES AND THREATS CAUSED BY HAZARDOUS MATERIALS SITES**, EPA, Oil and Special Materials Control Division (WH-548), Washington, D.C. 20460.
- DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS**, N.I. Sax, Van Nostrand, Reinhold, New York, 1979.
- EMERGENCY HANDLING OF HAZARDOUS MATERIALS IN SURFACE TRANSPORTATION (BE 1, 2, 3, 4)**, The Bureau of Explosives of the Association of American Railroads, 1920 L St., N.W., Washington, D.C. 20036, 1980.
- EMERGENCY SERVICES GUIDE FOR SELECTED HAZARDOUS MATERIALS**, Department of Transportation, Washington, D.C., 1978.
- EVALUATION OF PCB DESTRUCTION IN AN INDUSTRIAL BOILER**, S.G. Zelenski, EPA Center for Environmental Research Information, 26 W. St. Clair St., Cincinnati, Ohio, 45268.
- EVERYBODY'S PROBLEM: HAZARDOUS WASTE (SW-826)**, EPA Office of Water and Waste Management, EPA, Washington, D.C. 20460.
- EXPLOSIVE AND TOXIC HAZARDOUS MATERIALS**, James R. Meidl, 1970, (Code no. 47638), Glencoe Publishing Company Inc., Attn: Order Department, Front & Brown Sts., Riverside, N.J. 08370.
- FIRE AND EXPLOSION HAZARDS OF ORGANIC PEROXIDES No. RR-11**, American Insurance Association, Engineering and Safety Service, 85 John St., New York, N.Y. 10038.
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- FLAMMABLE HAZARDOUS MATERIALS**, James R. Meidl, 1978, (Code no. 47657), Glencoe Publishing Company, Inc., Front & Brown Sts., Riverside, N.J. 08370.
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- CHEMICAL AND ENGINEERING NEWS**, American Chemical Society, 1155 16th St., N.W., Washington, D.C., 20036, free to members, \$19 per year for nonmembers, weekly.
- CHEMICAL ENGINEERING**, McGraw-Hill, Subscription Department, Chemical Engineering, Hightstown N.J. 08520, \$20 per year, biweekly.
- CHEMICAL REGULATION REPORTER**, Bureau of National Affairs, Inc., Washington, D.C. 20037, \$601 per year for one binder of current information and five binders of reference materials, weekly.
- CHEMICAL WEEK**, McGraw-Hill, Subscription Department, P.O. Box 499, Hightstown, N.J. 08520, \$22 per year, weekly.
- COMMERCE BUSINESS DAILY**, Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, \$105 per year (priority mail), \$80 per year (domestic mail), daily.
- ENVIRONMENT**, Helen Dwight Reid Educational Foundation, 4000 Albermarle St., Washington, D.C. 20016, \$14 per year (personal price), \$22 per year institutional price), 10 issues per year.
- ENVIRONMENT REPORTER**, The Bureau of National Affairs, Inc., Washington, D.C. 20037, \$588 for one binder of current information and 11 binders of reference materials, weekly.
- ENVIRONMENTAL ACTION**, Environmental Action, Inc., 1346, Connecticut Ave., N.W., Washington, D.C. 20036, \$15 per year for subscription and membership, monthly.
- ENVIRONMENTAL AFFAIRS**, Boston College Law Review, 885 Centre St., Newton Centre, Mass. 02159 \$20 per year, quarterly.
- ENVIRONMENTAL CONTROL NEWS FOR SOUTHERN INDUSTRY**, Williams and Associates, P.O. Box 17386, Memphis, Tenn., 38117, \$24.00 per year, monthly.
- ENVIRONMENTAL LAW REPORTER**, Environmental Law Institute, 1346 Connecticut Ave., N.W., Washington, D.C., \$390 per year, monthly.
- ENVIRONMENTAL MANAGEMENT**, Springer Verlag Subscription Department, 44 Hartz Way, Secaucus, N.J. 07094, \$43 per year (personal price), \$75 per year (institutional price), bimonthly.
- EPA JOURNAL**, Single reprints available from EPA Printing Management Office, 401 M Street, S.W., Washington, D.C. 20460
- JOURNAL OF CHEMICAL ECOLOGY**, Plenum Press, 227 W. 17th St., New York, N.Y. 10011, \$49 per year (personal rate), \$98 per year (institutional rate), bimonthly.
- JOURNAL OF ENVIRONMENTAL HEALTH**, 1200 Lincoln St., Suite 704, Denver, Colo. 80203, \$15 per year, bimonthly.
- JOURNAL OF THE AMERICAN CHEMICAL SOCIETY**, Acs, 1155 16th St., N.W., Washington, D.C. 20036, \$180 per year to nonmembers, \$45 per year to members, biweekly.
- WASHINGTON ENVIRONMENTAL PROTECTION REPORT**, Callahan Publications, P.O. Box 3751, Washington, D.C. 20007 \$120.00 per year, biweekly.
-

II. TRAINING AND INFORMATIONAL DATA, Cont.

SOURCE LISTINGS

A

American Mutual Insurance Alliance
20 N. Wacker Drive
Chicago, Illinois 60606
Ph: (312) 346-5190

American National Standards
Institute (ANSI), Inc.
1430 Broadway
New York, New York 10018
Ph: (212) 868-1220

American Petroleum Institute (API)
1801 K Street, N.W.
Washington, D. C. 20006
Ph: (202) 833-5710

American Trucking Associations, Inc.
1616 P Street, N.W.
Washington, D.C. 20036
Ph: (202) 797-5400

C

The Chlorine Institute
342 Madison Avenue
New York, New York 10017
Ph: (212) 682-4324

Compressed Gas Association (CGA)
500 Fifth Avenue
New York, New York 10036
Ph: (212) 524-4796

CRC Press, Inc.
18901 Cranwood Parkway
Cleveland, Ohio 44128
Ph: (216) 475-9000

D

Department of Transportation
Office of the Secretary
Washington, D.C. 20590
Ph: (202) 426-4000

E

Elsevier Scientific Publishing Co.
P. O. Box 211
Amsterdam, The Netherlands

Energy Research and
Development Administration (ERDA)
Division of Operational Safety
Washington, D.C. 20545
Ph: (202) 353-3000

F

The Fertilizer Institute (TFI)
Transportation Committee
1015 - 18th Street, N.W.
Washington, D.C. 20036
Ph: (202) 466-2700

Flying Tiger Line
7401 World Way West
Los Angeles, California 90009
Ph: (213) 646-6161

REFERENCE DATA

DATA SOURCES**HAZARDOUS MATERIALS****II. TRAINING AND INFORMATIONAL DATA, Cont.****H**

Hazardous Materials Advisory
Committee (HMAC)
Transportation Association
of America (TAA)
Suite 1107
1100 - 17th Street, N.W.
Washington, D.C. 20036
Ph: (202) 296-2470

Hazardous Materials Publishing Co.
458 W. Main Street
Kutztown, Pennsylvania 19530
Ph: (215) 683-6721

Highway Safety Div. of Virginia
300 Turner Road
Richmond, Virginia 23225
Ph: (804) 276-9600

I

Institute of Makers of Explosives (IME)
420 Lexington Avenue
New York, New York 10017
Ph: (212) 689-3237

International Bridge, Tunnel and
Turnpike Association (IBTTA)
Suite 307
1225 Connecticut Avenue, N.W.
Washington, D.C. 20036
Ph: (202) 659-4620

J

Justrite Manufacturing Co.
2061 N. Southport Avenue
Chicago, Illinois 60614
Ph: (312) 348-2111

K

J. J. Keller & Associates, Inc.
145 W. Wisconsin Avenue
Neenah, Wisconsin 54956
Ph: (414) 722-2848

L

Labelmaster
6001 N. Clark Street
Chicago, Illinois 60660
Ph: (312) 973-4944

N

National Agricultural
Chemicals Association (NACA)
1155 - 15th Street, N.W.
Washington, D.C. 20005
Ph: (202) 296-1585

National Fire Protection
Association (NFPA)
470 Atlantic Avenue
Boston, Massachusetts 02210
Ph: (617) 482-8755

National Highway Traffic Safety
Administration (NHTSA)
U. S. Department of Transportation
Emergency Medical Services Branch
400 Seventh Street, S.W.
Washington, D.C. 20590
Ph: (202) 426-1828

National LP-Gas Association
79 W. Monroe Street
Chicago, Illinois 60603
Ph: (312) 377-5484

REFERENCE DATA

HAZARDOUS MATERIALS

DATA SOURCES

II. TRAINING AND INFORMATIONAL DATA, Cont.

N, Cont.

National Tank Truck Carriers, Inc.
1616 P Street, N.W.
Washington, D.C. 20036
Ph: (202) 269-3425

**National Technical
Information Service**
U.S. Department of Commerce
5285 Port Royal Road
Springfield, Virginia 22161
Ph: (703) 321-8500

O

**Occupational Safety and Health
Administration (OSHA)**
Hazardous Materials Branch
Labor Building
14th and Constitution Avenue
Washington, D.C. 20210
Ph: (202) 523-8148

P

**Port Authority of New York
and New Jersey**
Tunnels and Bridges Department
One World Trade Center
New York, New York 10048
Ph: (212) 466-7391

S

Society of the Plastics Industry
250 Park Avenue
New York, New York 10017
Ph: (212) 573-9400

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402
Ph: (202) 783-3238

U

Union Carbide Corporation
P. O. Box 4488
Charleston, West Virginia 25304
Ph: (304) 747-0001

REFERENCE DATA

III. ASSOCIATIONS AND GOVERNMENT AGENCIES

There are a number of government agencies and association which are directly or indirectly involved in the shipping, handling or transportation of hazardous materials. These sources can be of assistance with problems encountered with the safe handling of hazardous materials.

These agencies and associations are arranged alphabetically by the name of the government body or the association as appropriate.

A

AIR TRANSPORT ASSOCIATION
OF AMERICA
1709 New York Avenue, N.W.
Washington, D.C. 20006
Ph: (202) 872-4000

AMERICAN IRON AND STEEL
INSTITUTE
1000 - 16th Street, N.W.
Washington, D.C. 20036
Ph: (202) 452-7261

AMERICAN CHEMICAL SOCIETY
1155 - 16th Street, N.W.
Washington, D.C. 20036
Ph: (202) 872-4600

AMERICAN NATIONAL STANDARDS
INSTITUTE, INC. (ANSI)
1430 Broadway
New York, New York 10018
Ph: (212) 868-1220

AMERICAN PETROLEUM
INSTITUTE (API)
1801 K Street, N.W.
Washington, D.C. 20006
Ph: (202) 833-5710

AMERICAN SOCIETY FOR TESTING
AND MATERIALS (ASTM)
1916 Race Street
Philadelphia, Pennsylvania 19103
Ph: (215) 569-4200

AMERICAN SOCIETY OF MECHANICAL
ENGINEERS (ASME)
United Engineering Center
345 East 47th Street
New York, New York 10017
Ph: (212) 644-7782

ASSOCIATION OF AMERICAN
RAILROADS (AAR)
59 East Van Buren Street
Chicago, Illinois 60605
Ph: (312) 341-1790

AMERICAN TRUCKING
ASSOCIATIONS, INC. (ATA)
1616 P Street, N.W.
Washington, D.C. 20036
Ph: (202) 797-5400

ALUMINUM ASSOCIATION, THE
420 Lexington Avenue
New York, New York 10017

HAZARDOUS MATERIALS

DATA SOURCES

III. ASSOCIATIONS AND GOVERNMENT AGENCIES, Cont.

A, Cont.

AMERICAN WATER WORKS
ASSOCIATION (AWWA)
2 Park Avenue
New York, New York 10016

CHLORINE INSTITUTE, THE (CI)
342 Madison Avenue
New York, New York 10017

AMERICAN WELDING SOCIETY
2501 Northwest Seventh
Miami, Florida 33125
Ph: (305) 642-7090

COMPRESSED GAS ASSOCIATION (CGA)
500 Fifth Avenue
New York, New York 10036
Ph: (212) 354-1130

B

BUREAU OF EXPLOSIVES (B of E)
Association of American
Railroads
American Railroads Building
1920 L Street, N.W.
Washington, D.C. 20036
Ph: (202) 293-4048

CONSUMER PRODUCT SAFETY COMMISSION
Washington, D.C.
Ph: (202) 634-7700

COUNCIL ON ENVIRONMENTAL QUALITY
Information Office
Executive Office Building
Washington, D.C. 20506
Ph: (202) 382-1415

C

CENTER FOR DISEASE CONTROL (CDC)
Atlanta, Georgia
Ph: (404) 633-5313

COUNCIL ON THE SAFE TRANSPORTATION
OF HAZARDOUS MATERIALS (COSHTA)
910 - 17th Street, N.W.
Washington, D.C. 20006
Ph: (202) 659-9475

CHEMICAL TRANSPORTATION
EMERGENCY CENTER (CHEMTREC)*
Manufacturing Chemists
Association
1825 Connecticut Avenue, N.W.
Washington, D.C. 20009
Ph: (800) 424-9300 (TOLL-FREE)

F

FERTILIZER INSTITUTE, THE
Transportation Committee
1015 - 18th Street, N.W.
Washington, D.C. 20036
Ph: (202) 466-2700

FOOD AND DRUG ADMINISTRATION
Public Health Division
Rockville, Maryland 20852

*See Section IV, Accident
Assistance Sources

REFERENCE DATA

DATA SOURCES**HAZARDOUS MATERIALS****III. ASSOCIATIONS AND GOVERNMENT AGENCIES, Cont.****H**

**HAZARDOUS MATERIALS ADVISORY
COMMITTEE (HMAC)**
Suite 1107
1100 - 17th Street, N.W.
Washington, D.C. 20036
Ph: (202) 296-2470

**INTERNATIONAL BRIDGE, TUNNEL
AND TURNPIKE ASSOCIATION (IBTTA)**
Suite 307
1225 Connecticut Avenue, N.W.
Washington, D.C. 20036
Ph: (202) 659-4620

I

**INSTITUTE OF MAKERS OF
EXPLOSIVES (IME)**
420 Lexington Avenue
New York, New York 10017
Ph: (212) 986-6920

**INTERGOVERNMENTAL MARITIME
CONSULTATIVE ORGANIZATION (IMCO)**
101-104 Piccadilly
London W1V 0AE, England

**INTERNATIONAL AIR TRANSPORT
ASSOCIATION (IATA)**
1155 Mansfield Street
Montreal 113, P.Q., Canada
Ph: (514) 866-1011

26, Chemin De Joinville
P. O. Box 160
1216 Cointrin
Geneva, Switzerland
Ph: (022) 98 33 66
TELEX: 23391
CABLES: IATA GENEVA

N

**NATIONAL AGRICULTURAL CHEMICALS
ASSOCIATION (NACA)**
1155 - 15th Street, N.W.
Washington, D.C. 20005
Ph: (202) 296-1585

**NATIONAL ASSOCIATION OF
CORROSION ENGINEERS (NACE)**
2400 West Loop South
Houston, Texas 77027
Ph: (713) 622-8980

**NATIONAL ASSOCIATION OF FIRE
EQUIPMENT DISTRIBUTORS**
760 Thomas Drive
Bensenville, Illinois 60106

NATIONAL CARGO BUREAU
Suite 2757
One World Trade Center
New York, New York 10048
Ph: (212) 432-1280
Cable Address: NATCARBUR,
New York
RCA TELEX: 235127 NCB

(OFFICES OF THE NCB- see
next page)

REFERENCE DATA

HAZARDOUS MATERIALS

DATA SOURCES

III. ASSOCIATIONS AND GOVERNMENT AGENCIES, Cont.

N, Cont.

NATIONAL CARGO BUREAU, Cont.

OFFICES OF THE NCB

Atlantic Coast:

Searsport, Maine
Boston, Massachusetts
Albany, New York
Philadelphia, Pennsylvania
Baltimore, Maryland
Norfolk, Virginia
Wilmington, North Carolina
Charleston, South Carolina
Savannah, Georgia
Jacksonville, Florida
Miami, Florida
San Juan, Puerto Rico

Gulf Coast:

Boca Grande, Florida
Tampa, Florida
Pensacola, Florida
Mobile, Alabama
Pascagoula, Mississippi
New Orleans, Louisiana
Baton Rouge, Louisiana
Port Arthur, Texas
Houston, Texas
Galveston, Texas
Freeport, Texas
Corpus Christi, Texas
Brownsville, Texas

Pacific Coast:

Anchorage, Alaska
Seattle, Washington
Portland, Oregon
Coos Bay, Oregon
Eureka, California
San Francisco, California
Los Angeles Harbor, California
San Diego, California
Hilo, Hawaii
Honolulu, Hawaii

NATIONAL CARGO BUREAU, Cont.

Great Lakes:

Duluth, Minnesota
Milwaukee, Wisconsin
Chicago, Illinois
Detroit, Michigan
Toledo, Ohio
Cleveland, Ohio

NATIONAL COUNCIL ON RADIATION
PROTECTION AND MEASUREMENTS (NCRP)
Bethesda, Maryland
Ph: (301) 657-2652

NATIONAL FIRE PROTECTION
ASSOCIATION (NFPA)
60 Batterymarch Street
Boston, Massachusetts 02110
Ph: (617) 482-8755

NATIONAL LIQUIFIED PETROLEUM
GAS ASSOCIATION (NLPGA)
1301 W. 22nd Street
Oak Brook, Illinois 60521
Ph: (312) 986-4800

NATIONAL PAINT AND
COATINGS ASSOCIATION
1500 Rhode Island Ave., N.W.
Washington, D.C. 20005
Ph: (202) 802-6272

NATIONAL TANK TRUCK
CARRIERS, INC. (NTTC)
1616 P Street, N.W.
Washington, D.C. 20036
Ph: (202) 797-5425

REFERENCE DATA

DATA SOURCES**HAZARDOUS MATERIALS****III. ASSOCIATIONS AND GOVERNMENT AGENCIES, Cont.****N, Cont.**

**NATIONAL TECHNICAL
INFORMATION SERVICE (NTIS)**
U.S. Department of Commerce
5285 Port Royal Road
Springfield, Virginia 22161
Ph: (703) 321-8500

**NATIONAL TRANSPORTATION SAFETY
BOARD (NSTB)**
Washington, D.C.
Ph: (202) 655-4000

NATIONAL WOODEN BOX ASSOCIATION
P. O. Box 1010
Cumberland, Maryland 21502

O

**OCCUPATIONAL SAFETY & HEALTH
ADMINISTRATION (OSHA)**
Hazardous Materials Branch
Labor Building
14th and Constitution Ave., N.W.
Washington, D.C. 20210
Ph: (202) 523-8148

S

SOCIETY OF THE PLASTICS INDUSTRY
250 Park Avenue
New York, New York 10017
Ph: (212) 573-9400

T

TRANSPORTATION RESEARCH BOARD
2101 Constitution Avenue
Washington, D.C. 20418
Ph: (202) 389-6606

**TRANSPORTATION SAFETY
INSTITUTE (TSI)**
U.S. Department of Transportation
6500 South MacArthur Boulevard
Oklahoma City, Oklahoma 73125
Ph: (405) 686-2614

U

UNIFORM CLASSIFICATION COMMITTEE
222 South Riverside Plaza
Chicago, Illinois 60606
Ph: (312) 648-7944

U.S. DEPARTMENT OF DEFENSE
Office of Safety and Security
The Pentagon
Washington, D.C. 20301
PH: (202) 545-6700

**U.S. ENERGY RESEARCH AND
DEVELOPMENT AGENCY (ERDA)***
Washington, D.C. 20555
Ph: (301) 353-3000

**U.S. ENVIRONMENTAL PROTECTION
AGENCY (EPA)**
Washington, D.C. 20460
Ph: (202) 655-4000

**U.S. NUCLEAR REGULATORY
COMMISSION (NRC)**
Office of Standards Development
Washington, D.C. 20555
Ph: (202) 492-7000

* See Section IV, Accident
Assistance Sources

IV. ACCIDENT ASSISTANCE SOURCES, Cont.

A. ERDA, Cont.

**REGIONAL COORDINATING OFFICES FOR RADIOLOGICAL
ASSISTANCE AND GEOGRAPHICAL AREAS OF
RESPONSIBILITY**

AREA	REGIONAL COORDINATING OFFICE	ADDRESS AND TELEPHONE
1	BROOKHAVEN AREA OFFICE	Upton, Long Island New York 11973 Ph: (516) 345-2200
2	OAK RIDGE OPERATIONS OFFICE	P. O. Box E Oak Ridge, Tennessee 37830 Ph: (615) 483-8611 Ext. 3-4510
3	SAVANNAH RIVER OPERATIONS OFFICE	P. O. Box A Aiken, South Carolina 29801 Ph: (303) 824-6331 Ext. 3333
4	ALBUQUERQUE OPERATIONS OFFICE	P. O. Box 5400 Albuquerque, New Mexico 87115 Ph: (505) 264-4667
5	CHICAGO OPERATIONS OFFICE	9800 South Cass Avenue Argonne, Illinois 60439 Ph: (312) 739-7711 Ext. 2111 (Duty Hrs.) Ext. 4451 (Off-Duty Hrs.)
6	IDAHO OPERATIONS OFFICE	P. O. Box 2108 Idaho Falls, Idaho 83401 Ph: (208) 526-0111 Ext. 1515
7	SAN FRANCISCO OPERATIONS OFFICE	1333 Broadway Oakland, California 94612 Ph: (415) 273-4237
8	RICHLAND OPERATIONS OFFICE	P. O. Box 550 Richland, Washington 99352 Ph: (509) 942-7381

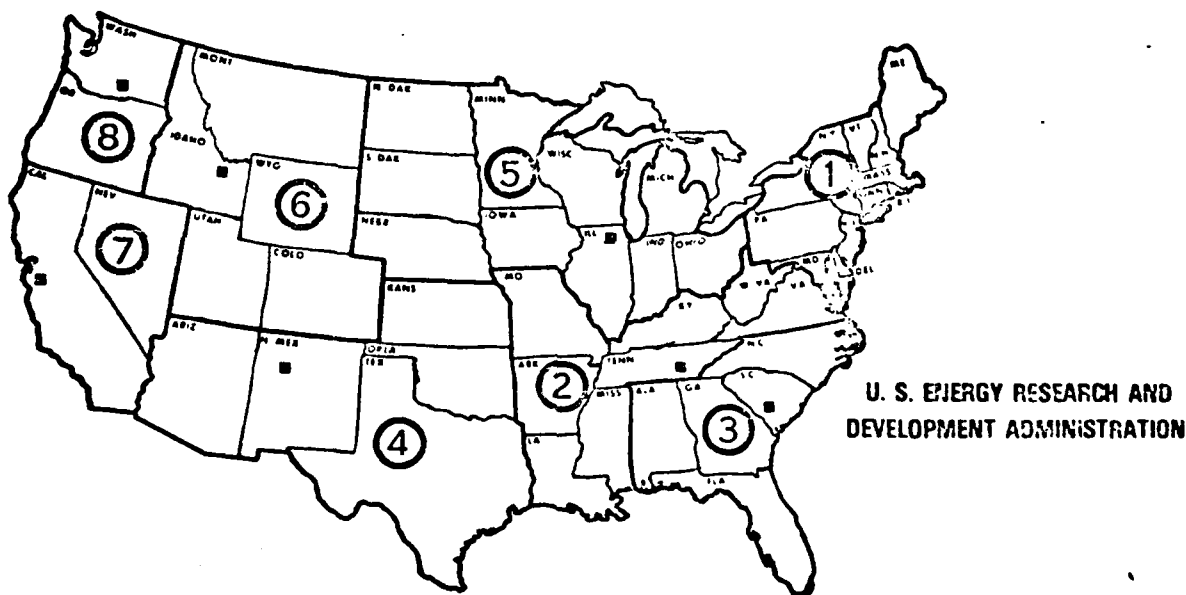
REFERENCE DATA

IV. ACCIDENT ASSISTANCE SOURCES

Emergency assistance in case of an accident involving radioactive materials or chemicals may be obtained from the regional offices of the U.S. Energy Research and Development Administration and the Chemical Transportation Emergency Center (CHEMTREC).

A. U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (ERDA)

The U.S. Energy Research and Development Administration (formerly the U.S. Atomic Energy Commission) can provide assistance on an emergency basis when accidents or incidents occur involving radioactive materials. Whenever emergency radiation data is required, you should contact the nearest regional office of ERDA, situated as illustrated below.



IV. ACCIDENT ASSISTANCE SOURCES, Cont.**B. CHEMICAL TRANSPORTATION EMERGENCY CENTER (CHEMTREC)**

In the event of a major accident or spill of pesticides or a chemical related accident, the Chemical Transportation Emergency Center, known as CHEMTREC, will provide advice for those at the scene of the accident. CHEMTREC will contact the shipper of the chemicals involved for detailed assistance and appropriate follow-up.

The CHEMTREC service is linked to a similar operation formerly manned by the National Agricultural Chemicals Association, known as the Pesticide Safety Team Network, PSTN. PSTN is contacted through use of the CHEMTREC number.

For assistance in a transportation emergency involving chemicals or pesticides,

PHONE: TOLL - FREE, DAY OR NIGHT

(800)

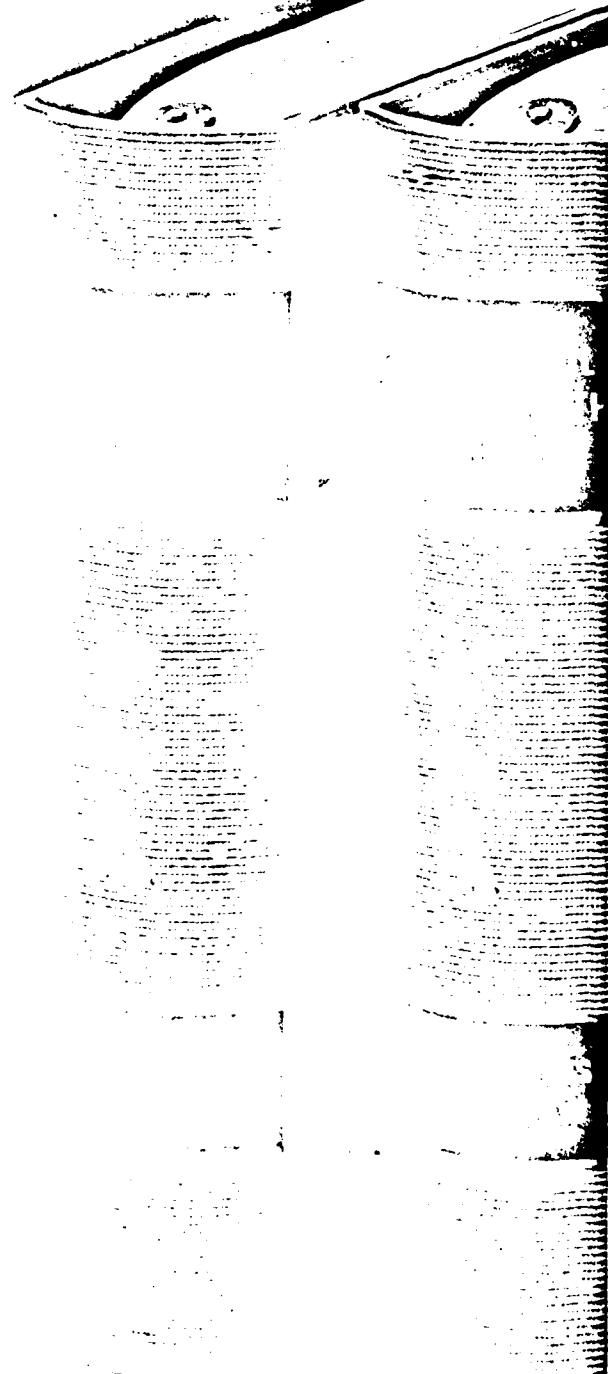
424-9300

District of Columbia, Call: 483-7616
Alaska or Hawaii, Call: (202) 483-7616

The Chemical Transportation Emergency Center is a public service of the Manufacturing Chemists Association. Inquiries about CHEMTREC should be addressed as follows --

Manager
Chemical Transportation Emergency Center
1825 Connecticut Avenue, N.W.
Washington, D. C. 20009

Ph: (202) 483-6126



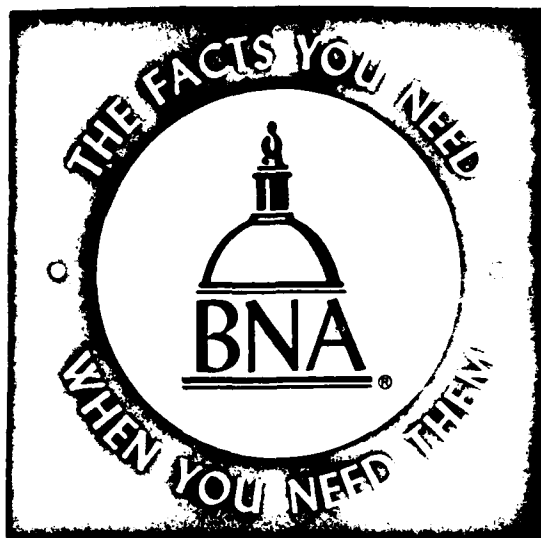
OSHR's Current Reports give you week-by-week notification, analysis, and interpretation of significant developments in the job safety and health field.

Each Current Report offers:

- **Highlights**—A terse, front-page roundup of major developments for quick scanning
- **Topical Summary**—A key-word index of the entire contents
- **Current Developments**—In-depth reports of legislative, regulatory, judicial, industrial and technical developments
- **Full Text Section**—Text of administrative rulings, proposed regulations, and noteworthy documents
- **Journal**—A calendar of events, meetings, hearings, seminars, and congressional activities and schedules
- **Index**—Cumulative indexing with cross references to OSHR's Reference File

Coverage of OSHR's Current Reports includes:

- **Federal safety and health standards**—including key recommendations and public testimony, as standards are proposed and amended
- **Enforcement activities**—including inspections, citations, and penalties, and rulings of the Occupational Safety and Health Review Commission
- **Research**—including activities of HEW's National Institute for Occupational Safety and Health, and highlighting decisions on toxic substances and harmful physical agents and criteria being developed for new standards
- **Legislative activities**—including bills introduced, committee hearings, committee reports, and congressional floor debates
- **Advisory committee recommendations**—including recommendations of the National Advisory Committee charged with overseeing the entire occupational safety and health law, and of standards committees appointed by the Secretary of Labor
- **Union activities**—guidelines for union agents, safety and health issues in collective bargaining
- **Association recommendations and plans**—including proposals of the American National Standards Institute, and the National Fire Protection Association
- **State activities**—states' plans for drafting and enforcing workplace standards under federal grants
- **Related developments under other federal safety and health statutes**—including the Walsh-Healey Public Contracts Act, the McNamara-O'Hara Service Contract Act, the Federal Coal Mine Health and Safety Act, the Federal Metal and Nonmetallic Mine Safety Act, the Longshoremen's and Harbor Workers' Compensation Act, and the National Foundation on Arts and Humanities Act



The organization behind
**OCCUPATIONAL SAFETY
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Authoritative . . . based on the latest available official information.

Comprehensive . . . reporting all significant occupational safety and health developments, including useful information not generally available elsewhere.

Timely . . . alerting its users immediately to pertinent federal legislative, administrative, and judicial activities in workplace safety, and providing the earliest possible notice of state plans.

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THE BUREAU OF NATIONAL AFFAIRS, INC., makes available the following privately circulated reports and information services:

ANTITRUST & TRADE REGULATION REPORT
 EMPLOYMENT AND PRACTICE SERIES
 Employee Relations Executives
 PATENT, TRADEMARK & COPYRIGHT JOURNAL
 COLLECTIVE BARGAINING NEGOTIATIONS & CONTRACTS
 INTERNATIONAL LABOR REPORT
 INTERNATIONAL LAWS & TREATIES OF THE WORLD
 INTERNATIONAL LAW REPORTER
 LABOR REPORT
 LABOR REPORT FOR EXECUTIVES
 LABOR REPORT
 INTERNATIONAL LAWS & TREATIES OF THE WORLD
 LABOR REPORT
 LABOR SHIPPING MANUAL
 LABOR RELATIONS PRACTICE SERVICE
 LABOR CONTRACTS REPORT
 LABOR UNION & EXCHANGE CONTROLS
 LABOR UNION EMPLOYEE RELATIONS REPORT
 LABOR UNION REPORTER & THE COMMON MARKET
 LABOR UNION REPORTS
 LABOR UNION REPORT
 LABOR INFORMATION SERVICE
 LABOR SAFETY & HEALTH REPORTER

LABOR AGREEMENT
 LABOR PRACTICE FORM
 LABOR REPORT
 LABOR RELATIONS & LAW REPORT
 LABOR LOYALTY REPORTS
 LABOR UNIONS, STATES, CITIES, AND TRUSTS
 LABOR UNION & EXCHANGE CONTROLS
 LABOR UNION EMPLOYEE RELATIONS REPORT
 LABOR UNION REPORTER & THE COMMON MARKET
 LABOR UNION REPORTS
 LABOR UNION REPORT
 LABOR INFORMATION SERVICE
 LABOR SAFETY & HEALTH REPORTER

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BNA's reports and information services are available in the following formats: hard copy, microfiche, and audio cassette. BNA's reports and information services are available in the following formats: hard copy, microfiche, and audio cassette.

THE BUREAU OF NATIONAL AFFAIRS, INC., 1231 25th Street, N.W., Washington, D.C. 20037



CLEAN SLATE

NAVAL ENVIRONMENTAL PROTECTION SUPPORT SERVICE

No. 29

NEPSS is a service organization providing
environmental management and engineering
support to all levels of Navy Commands

April 1980

NESO Organizes for Hazardous Actions

To support Navy efforts to comply with regulations covering hazardous materials, NESO has established a new Hazardous Materials Division, headed by Karl Kneeling (Code 2512). Division functions include management and program direction of hazardous materials, hazardous waste handling and disposal, toxic substances control, solid waste management, and environmental aspects of the Navy's pest control program. In addition, the division performs studies of old hazardous disposal areas under the NACIP Program (see article elsewhere in this issue).

The Hazardous Materials Division is only the first stage of the Navy's effort to marshal the resources that will be needed to comply with existing and upcoming hazardous management regulations. Many EFD Environmental Branches are also reorganizing to better handle the flood of hazardous material compliance requirements (e.g., SOUTHDI's CHIP team described in the last issue of Clean Slate).

OPNAVNOTE 6240, Ser. 730791 of 20 Feb 1980, clearly states the immediate task confronting the Navy's hazardous management forces. It establishes the Navy Hazardous Materials Environmental Management Program and sets survey and planning deadlines, including two ship related tasks — Hazardous Waste Surveys by 1 June 1980 and Management Plans by 1 June 1981 — and two shore activity tasks — Hazardous Materials Management Surveys by 1 June 1980 and Hazardous Waste Management Plans by 1 October 1980.

The Notice also requires the development of Hazardous Materials Spill Prevention Control and Countermeasures (SPCC) and Spill Contingency Plans by ships and shore activities.

Procedures for conducting the surveys and incorporating the resultant information into the three activity management plans are described in the "Navy Hazardous Materials Management Guide" NESO 20.2-024A provided as an enclosure to the Notice.

The deadlines established by the CNO notice will ensure Navy compliance with impending Federal hazardous waste regulations. Some of these regulations, promulgated by EPA on 26 February 1980, govern hazardous waste generators and transporters. Critical regulations, yet to be promulgated, will identify characteristics of hazardous wastes and list particular wastes as hazardous. When they are promulgated, an activity will have 90 days to file a notification with EPA regarding its status as a generator, transporter, or owner/operator of a hazardous waste treatment, storage, or disposal facility.

Obviously, time is of the essence. All Navy ships and shore activities must immediately evaluate their facilities using the uniform guidelines and procedures contained in the OPNAVNOTICE. When the entire hazardous waste regulatory package has been issued, NESO will develop a document summarizing the requirements and their impact on ships and shore installations. Meanwhile, NESO and the EFDs are prepared to offer needed guidance and instruction.



Occupational Health **NOTES**

NAVY ENVIRONMENTAL HEALTH CENTER

VOLUME VII, NO. 1

FEBRUARY, 1980

HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS) ACTIVATED DOD-WIDE

By: Charles M. Almond, III
Technical Information Specialist

A new publication, entitled "DOD Hazardous Materials Information System, Hazardous Item Listing," specifically designed for use by health/safety and transportation personnel, is available on microfiche, on an annual basis with quarterly updates. About 3,000 items are currently included in the file. All of the health and safety data elements from the Material Safety Data Sheet (MSDS, OSHA Form 20) as well as transportation data are contained and are accessible by national stock numbers or by manufacturer's name and part number. The addition of data elements for disposal of hazardous materials is in the developmental stage.

Implemented by DOD INST 6050.5 of 25 Jan 1978, the purpose of HMIS is to provide a central system for the collection, main-

(Continued on page 6)

SEVENTH YEAR FOR "NOTES"

This issue marks the beginning of Volume VII - the seventh year of publication for "Notes". Those years have seen many changes, new developments and undoubtedly the coming years will see many more. "Notes" has tried to highlight progress in many fields, to cross boundaries of interrelated health interests and give a broader view of many disciplines. From the many unsolicited compliments received, we must have done a fair job. We pledge to continue and to do even better in the future.

SURGEON GENERAL'S KEYNOTE ADDRESS SHOWS STRONG SUPPORT FOR OCCUPATIONAL HEALTH

Over 640 attendees heard Navy Surgeon General, VADM W.P. Arentzen, MC, USN, open the 22nd Navy Occupational Health Workshop in San Diego January 14th. VADM Arentzen's challenging remarks confirmed his strong support for the Navy's occupational and environmental health program and, as was evident throughout his speech, reflected his desire for its continued improvement.

The Surgeon General stated that creativity, perseverance, a sense of responsibility, and courage are necessary ingredients in meeting the "big challenges and opportunities" of the program. The pursuit of excellence minimizes misuse of scarce resources, particularly skilled, qualified manpower, and assists in the achievement of the safe, healthful work environment for

(Continued on page 4)

OSHA PUBLISHES REGULATIONS FOR SUSPECTED WORKPLACE CARCINOGENS

On January 22, OSHA published its long-awaited rules to protect workers from cancer-causing substances on the job. If not delayed by court action, as has been the case with most controversial rules, they would take effect April 24.

Although unions and others have criticized the delay, industry quickly charged the proposed rules as unclear, excessively rigid and would be insupportably costly. As part of the rules is a list of 500 "candidate" substances for which evidence indicates they cause human cancer. Previously, only 20 workplace carcinogens have been regulated by OSHA, although the NIOSH list of potential carcinogens includes 2,500 substances used in industry.

Superfund Law... (Continued from page one)

Past and present hazardous waste TSD facilities that were not previously identified under the Resource Conservation and Recovery Act must now be identified.

Activity commanders are responsible for completing and forwarding the EPA notification forms. Host installations shall request, assemble, and forward notices from all tenant commands.

EPA will compile a list of abandoned hazardous waste disposal sites. The top 400 priority sites requiring remedial action for cleanup or to protect people and the environment from contaminants will be identified by EPA.

Revenues from surcharges collected by disposal site operators will be paid into a federally controlled fund. The Navy's contribution to the fund will begin in September 1983, at the rate of \$2.13 per dryweight ton of hazardous waste delivered to a disposal site. The fund will be used to finance Federal, state, and local actions to mitigate hazardous releases.

Superfund Tightens Up Hazardous Spill Contingency Actions

As little as one pound of hazardous material unexpectedly released into the environment is a "reportable spill" under the "Superfund" law—the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

CERCLA uses lists of hazardous materials and hazardous wastes derived from the Resource Conservation and Recovery Act (RCRA), the Clean Air Act (CAA), the Toxic Substances Control Act (TSCA), and the Clean Water Act (CWA) to define a reportable release.

A reportable release is

- One pound of any of the RCRA hazardous wastes listed at 40 CFR 261.
- One pound of any of the CAA hazardous air pollutants listed at 40 CFR 61.
- One pound of PCB or any other TSCA regulated substance.
- One pound of any of the CWA toxic

pollutants listed at 40 CFR 401.15.

—Any of the CWA hazardous water pollutants exceeding the reportable quantities listed at 40 CFR 117.

CERCLA's spill reporting and contingency requirements are now in effect, but are not yet defined by regulations. New guidelines for amending the National Contingency Plan (the National Oil and Hazardous Substances Pollution Contingency Plan) will be published soon by EPA.

EPA plans to retain the current National Contingency Plan for oil spills and to add two new parts to that plan: one part for hazardous spills and one part for remedial actions at hazardous waste disposal sites.

Superfund Dollars Limited

Federal agencies will have limited access to the dollars in the Superfund. Guidelines for drawing from the fund have not been established. The law allows Federal activities to draw from the fund to mitigate imminent hazardous situations related to spills. The fund cannot be used for remedial actions to mitigate problems at abandoned disposal sites, such as those identified for corrective action under the Navy Assessment and Control of Installation Pollutants (NACIP) program.

Major Compliance Events

Under Superfund

9 Jun 81

CERCLA-required notices must be sent to EPA regional office.

30 Sep 83

\$2.13 per ton hazardous waste disposal surcharge fee goes into effect.

NOTICE

Safe Step, listed in NIS-6 26.2-028 as an absorbent for PCB spills, is now available under new item inventory schedule contract No. GS-005-22049 special item No. NIS-G-1979. Pauline Boone, GSA contracting officer at 703-557-1432 can answer questions about the contract.

NEPSS



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NAVAL ENVIRONMENTAL PROTECTION SUPPORT SERVICE

No. 33

NEPSS is a service organization providing
environmental management and engineering
support to all levels of Navy Commands

May 1981

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Superfund Law Adds New Compliance Actions

The widely publicized "Superfund Law" reflects national concern for the identification, funding and cleanup of hazardous releases. The law establishes broad Federal authority for controlling hazardous materials: hazardous releases must be reported, abandoned hazardous waste sites must be identified, effects of releases and contamination from old hazardous waste disposal sites must be mitigated, and a fund must be established to pay for mitigating actions.

Officially termed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the law applies to past and current hazardous substance treatment, storage, and disposal (TSD) facilities.

A hazardous release into air or into water can result from an explosion, an outgassing, a spill, or leaching. Until new guidelines are provided by EPA, hazardous releases will be reported the same as oil spills are now reported.

(Continued on page two)

Naval Activities to Report Hazardous Site Locations

Naval activity compliance with the Superfund Law is spelled out in CNO Message 061926Z May 81. The law requires reporting of present and past hazardous waste treatment, storage, and disposal (TSD) facilities. (See preceding article.)

Past hazardous waste TSD sites include any site still owned by the Navy but no longer used, or any site that has been abandoned by the Navy, whether still owned or whether decided to other governmental agencies or private parties.

Activity commanders are responsible for completing and forwarding the EPA notification forms. Host installations shall request, assemble, and forward notices from all tenant commands.

The notification must be mailed to the Environmental Protection Agency regional office no later than 9 June 1981.

Notification may be based on preparer's knowledge, belief, recollection, or examination of reasonably available records, and recollections of current employees who were in the past involved with hazardous waste operations. Extensive research is not required at this time.

The general public is encouraged to fill out the notification form if they know of sites which otherwise might not be reported.

EPA Superfund packets, containing general information and EPA form 8900-1, Notification of Hazardous Waste Site, have been distributed. Packets are also available from the EPA regional office or from NAVFAC engineering field divisions. EPA will acknowledge receipt of the notification.

Don't Throw Away Petroleum Fuels

A quantity of fuel oil was improperly disposed of in a dump because it was reported to be too contaminated for its original purpose. Later, the degree of contamination was determined to be so slight that the fuel could have been recycled or blended with better fuel for reissue.

As a result, CAPT Tom Stallman, The Naval Facilities Engineering Command (NAVFAC) Inspector General, issued the following advice.

"Regardless of how contaminated or otherwise unfit a petroleum fuel may be for its original purpose, the high cost of these products now makes reprocessing or alternative use mandatory. At the same time, this will also avoid any problems of environmentally safe disposal.

"Several positive steps are recommended for preventing any unintentional waste of these valuable petroleum fuel products.

1. Become familiar with the procedures for returning fuel products to the supply system by consulting with fuel supply personnel, and for other petroleum products by contacting local Defense Property Disposal offices.

2. Read technical information and guidance such as

- NEESA 20.2-027A, Guide for the Programming of Oily Waste/Waste Oil Management Facilities

- DOD Policy Memorandum of 4 Jun 79, Oil Recycling and Reuse Policy

- NAVSUPINST 4100.2 of 4 Dec 79, Fuel Reclamation Program

3. Consult the appropriate contact at NAVFAC Headquarters, Mr. Rob Castellucci, A/V 221-8531; and at the Naval Energy and Environmental Support Activity (NEESA), Mr. Steve Ehret, A/V 360-4067.

4. Add suitable information to any pertinent plans, specifications, job orders, etc., alerting field personnel and contractors to be aware of and to not carelessly or unknowingly waste fuel products.

5. Report any lessons learned or suggestions along these lines to NEESA Codes 111A and 112W/Ehret."

Hazardous Waste Managers Assess Compliance

Navy managers met in April at the Naval Energy and Environmental Support Activity (NEESA), Port Hueneme, CA, to assess the Navy's compliance with the new EPA hazardous waste regulations resulting from the Resource Conservation and Recovery Act (RCRA) and to identify areas that require more attention. The meeting was attended by representatives of CNO, CNM, NAVFAC, PWCs, EFDs and several lead activities.

Attendees reported that much progress has been made in implementing OPNAVNOTE 6240 of 20 Feb 80, but many naval activities have still not completed required surveys and have not finalized and implemented hazardous waste management plans. In addition, some activities with interim status permits for hazardous waste treatment, storage, or disposal have not completed waste analysis plans, site closure plans, or other plans required by RCRA regulations.

Drafts of a waste analysis plan and a storage site closure plan were finalized. These will be issued as guidelines for activity use in developing comprehensive hazardous waste management plans.

Representatives from the Defense Property Disposal Service, Battle Creek, MI, described plans for implementing DOD policy memorandum 80-5 of May 1980. The plans cover the efforts of the Defense Logistic Agency and the Defense Property Disposal Offices (DPDOs) to provide DOD-wide disposal of excess hazardous materials and of hazardous wastes.

A negotiated Interservice Support Agreement (ISA) was presented as a means of initiating a smooth hazardous waste handling and disposal operation between a lead activity and the DPDO. Northern Division, Naval Facilities Engineering Command, presented a draft ISA between Ships Parts Control Center, Mechanicsburg, PA, and the local DPDO. When finalized the agreement will serve as a model for other lead activities.

NAVFAC presented a draft statement of work for contracting hazardous waste collection, packaging, storage, and disposal, and related environmental compliance paperwork. The statement of work may be used by

(Continued on page four)

Navy Activities to Benefit from NAVOSH Meeting

Responsibility for initiating correction of safety and health hazards belongs to the commanding officer of each Navy activity. The Navy Occupational Safety and Health (NAVOSH) Deficiency Abatement Program is a mechanism to fund and correct hazards.

Major claimants, systems commands, and engineering field division (EFD) managers discussed these responsibilities in a meeting at the Naval Energy and Environmental Support Activity, April 7, 8, and 9. The meeting was hosted by the Office of the Chief of Naval Operations and the Naval Facilities Engineering Command (NAVFAC).

An immediate benefit to Navy activities is improved project submittals and more accurate reports on project status.

NAVOSH project information for correction of occupational safety and health hazards is submitted on the OSH Control Report (OCR) form. Complete and correct OCR forms will enable the projects to move faster through the chain of command, resulting in faster hazard abatement. Incorrect or incomplete OCR forms will be returned more quickly to the activities because of improved project reviews by claimants and EFDs.

Claimants can provide a quarterly status report of NAVOSH projects to their activities. This report enables activities to know the current status of projects and to compare these projects with others in the same chain of command.

Beginning July 1981, OCR computer printouts for revised projects will be mailed quarterly instead of weekly. New projects will continue to be mailed on a weekly basis.

Many activities have provided a mailing code for OCR forms. Activities should provide additional mailing codes to Cheryl Thomas, A/V 360-4063

Current NAVOSH instructions are listed in "Hot Off the Press" (page 7).

CECOS Offers Energy and Environmental Protection Courses

Two one-week Civil Engineer Corps Officer School courses and a one-day executive seminar will be hosted by Southern Division, Naval Facilities Engineering Command, in August at NAS Jacksonville, FL.

The Energy Management Course, August 3-7, offers an overview of energy conservation techniques available for improved facilities systems management.

The Environmental Protection Course, August 11-14, trains managers and planners to understand the causes and effects of pollution, to recognize laws and regulations requiring Navy compliance, and to consider the environment during the decision-making process. The Navy Occupational Safety and Health (NAVOSH) program will also be discussed.

A specially designed one-day seminar on August 10 will provide an overview of the Environmental Management, Energy Management and NAVOSH programs for Navy commanding officers, executive officers, and senior public works officers.

Further information may be obtained by calling Mr. Rich Chittenden at CECOS, A/V 360-5655 or commercial 805-982-5655.

Hazardous Waste...

(Continued from page three)

PWCs and other lead activities to contract for those services.

NEESA and NAVFAC agreed to develop a comprehensive hazardous waste training program to instruct and educate naval personnel involved in hazardous waste management. The program will be initiated by CNO through the major claimants.

Other issues discussed at the meeting ranged from recent PCB regulations to the responsibilities for control of wastes disposed of in off-site facilities.

The Plain Language Address (PLA) for sending naval messages to the Naval Energy and Environmental Support Activity is NAVENENVSA PORT HUENEME CA.

INFORMATION BULLETIN

Naval Energy and Environmental Support Activity

Port Hueneme, California 93043

IB-075

April 1981

A CHECKLIST FOR REVIEWING PROJECTS IN THE NAVY OCCUPATIONAL SAFETY AND HEALTH CONTROL REPORT

This checklist is for naval activity personnel who write Navy Occupational Safety and Health (NAVOSH) projects on the NAVOSH Control Report (OCR) form. The purpose of the checklist is to improve the quality of OCRs so that projects will be funded more efficiently and will not be rejected.

1. Does the project solve a safety or health problem?
2. Does the project fulfill the funding requirements?
3. Are the hazards grouped by category?
4. Is the UIC (Unit Identification Code) correct?
5. Is the project title definitive; that is, does it uniquely summarize the project?
6. If a group of OCR projects, documenting multiple deficiencies within the same building, are submitted together, does the project title link the projects? Is the project number the same?
7. Does the program (safety or health) match the hazard control assessment (safety or health)?
8. Are all paragraphs understandable and sufficiently detailed?
9. Are interim control measures being used?
10. Will the corrective action solve the problem?
11. Is the standard number and a summary of the standard given?
 - Options for standards are
 - Navy instruction
 - OSH regulation (29 CFR 1910 or 29 CFR 1926)
 - ACGIH standard (TLV list)
 - ANSI standard
 - OSH Act, Section 5
12. Is the money in thousands of dollars?
13. Is the fiscal year listed as unprogrammed (UP)?
14. Is the regulation date (that is, date of the standard) stated?
15. Is the miscellaneous data correct?
16. Is paragraph 12 complete?

17. Is the Hazard Control Assessment complete? Items usually not completed are items 3, 4, 9, and 11.

18. Has days lost per incident (item 5 of the Hazard Control Assessment) been calculated according to NAVFACINST 5100.14 enclosure (4)?



Applicable Standards	Paragraph 8
Interim Control Measures	Paragraph 4
Concise, Complete Writing	Paragraphs 2-8
Funding Thresholds	Paragraph 9

Projects eligible for centrally managed NAVOSH funds should be submitted on the OCR form as outlined in OPNAVINST 5100.23A and NAVFACINST 5100.14.

Activities should submit projects funded through O&M,N and OPN to their major claimants via the chain of command. Projects funded through MCON should be sent to the cognizant engineering field division.

Points of contact for major claimants, systems commands, and NAVFAC engineering field divisions (EFDs) are listed below.

MAJOR CLAIMANT	CODE	NAME	AUTOVON
BUMED	3212	LT Tom Breitzke	294-4670
CHNAVRES	005A	Alex Fisher	363-1390
CINCLANTFLT	N934	Jack Gordon	690-6789
CINCPACFLT	N497	Robert Coulton	443-1233
CMC	LFF-1	MAJ Wasson	224-1929
CNET	N10B4	Bob Ryan	922-4146
CNM	MAT04F6	Ed Krattovil	222-8837
NAVINTCOM	223	Ms. Axtell	292-3540
NAVOCEANCOM	N341	CDR Callahan	485-4890
NAVPERs	NMPC0233	Mr. J. Scott	224-1175
NAVSECGRU	G40SO	Mr. T. Eisiminger	292-0331
NAVTELCOM	514	LT Gary Asztalos	292-0685
NAVCOMPT	NC06	Mr. C. Dalrymple	694-3443
ONR	700F	Mr. David G. Price	297-3052

SYSTEMS COMMAND

NAVAIR	AIR-09E4	Mr. Thomas Henry	222-1234
NAVELEX	ELEX-01K	Mr. T. Sliwa	222-7064
NAVFAC	FAC-09A1	Mr. L. Cahart	221-0246
NAVSEA	SEA-01E4	M. B. Stapor	222-0683
NAVSUP	SUP-09H2	Mr. Clint Maish	225-3671
DLP	MAT-08L31	Mr. Allen Cross	222-1136

ENGINEERING FIELD DIVISION

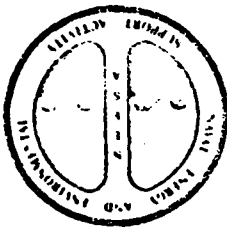
CHES	114.3	Chris Easter	288-3761
LANT	114A	Sharon Gatling	690-7069
NORTH	1142	Dave Smith	443-4372
PAC	11418	Vernon Yamamoto	471-3943
SOUTH	114C	Herb Fraser	794-5510
WEST	114	Rich Seraydarian	859-7499

JOHN P. COLLINS

Not too many years ago, "environmental protection" was a vague term not clearly understood by many people. "Occupational safety and health" was a condition that concerned only a small group of technical specialists in industrial hygiene and occupational health. Today, through legislation and mass media attention, they have become major concerns of the United States Navy. Add to these a developing awareness for land and natural resources management and you have the total picture of the Naval Environmental Protection Support Service (NEPSS).

When the requirements for energy production and energy conservation are added to these NEPSS tasks, the grand total of the Naval Energy and Environmental Support Activity's (NEESA's) mission to the Navy emerges.

These programs represent the challenge of the 80s. With a unique mix of high-caliber Navy military and civilian personnel, NEESA is equipped to meet the challenge for the Navy and to lead the nation to a safer, more secure future.



FROM THE OFFICER IN CHARGE



DEPARTMENT OF THE NAVY

NAVAL ENERGY AND ENVIRONMENTAL SUPPORT ACTIVITY
PORT HUENEME, CALIFORNIA 93043

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DIRECTOR
NAVSEA SAFETY SCHOOL
POPLA'S RESEARCH CONFERENCE CENTER
400 E. SEVENTH ST.,
BLOOMINGTON, IND 47405

NEESA Changes Command

Change of command ceremonies were observed, 27 April 1981, when LCDR John P. Collins, assistant officer in charge, relieved CDR Lee R. Bohning as officer in charge of the Naval Energy and Environmental Support Activity (NEESA), Port Hueneme, California.

Guest speaker was Rear Admiral William M. Zobel, Chief of Civil Engineers and Commander, Naval Facilities Engineering Command. Admiral Zobel commended the efforts of CDR Bohning, LCDR Collins, and the NEESA personnel in providing a multitude of unique services to the Navy.

The melding of the Naval Nuclear Power Unit (NNPU) and the Navy Environmental Support Office (NESO) into the NEESA in July 1980 posed a challenge to officers, enlisted, and civilians of the organization, LCDR Collins said as he accepted the command. "Due to your (CDR Bohning's) leadership and direction, we have met that challenge. We have succeeded in developing NEESA as a truly responsive and effective organization."

Speaking of the activity's uniqueness in the Navy, LCDR Collins mentioned NEESA's Medical Service Corps and Civil Engineer Corps officers working together with engineers, scientists, health physicists, and technicians in environmental protection and occupational safety and health programs. The activity's mix of Seabee technicians and civilian engineers is also unique in providing the Navy assistance in both energy production, through the MUSE (mobile utilities support equipment) program, and energy conservation.

"Not only is our mix of Seabee, civilian, and officer personnel unique, everything we do is unique, in that nothing we do is done anywhere else in the Navy," LCDR Collins said.

Among distinguished guests were Mary-Margaret Goodwin, Special Asst. to the Deputy Under Secretary of the Navy for Environment; CAPT Ed Oscarson, Deputy Commander for Facilities Management, NAVFAC; CAPT Ben Montoya, CNO's director of environmental protection and occupational safety and health; CAPT Salvatore Annunelli, NAVFAC's assistant commander for energy and environment; CAPT John Shanley, CO, NCBC Port Hueneme; CAPT Ron P. Cope, OIC Civil Engineering Laboratory; and CAPT T. R. Mathis, CO, Naval Ship Weapon Systems Engineering Station, Port Hueneme.

HOT OFF THE PRESS

Copies of documents listed in this column are available from NEESA Code 110S, Stella DiDomizio, A/V 360-4182 or FTS 799-4182, unless otherwise indicated.

NAVOSH Instructions. The Navy Occupational Safety and Health (NAVOSH) program for all Navy personnel is established in OPNAVINST 5100.23A of 23 Jan 81. Policy and implementing guidance for the NAVOSH Deficiency Abatement Program Ashore, a component of the NAVOSH program, is provided in NAVFACINST 5100.14

NAVOSH Directory. NEESA has published the Directory of Contacts for the NAVOSH Deficiency Abatement Program, 70.2-002. It lists contacts at activities, EFDs, and major claimants.

Environmental Engineering Survey Guide, NEESA 20.2-014B assists EFD personnel in planning, conducting, and reporting EESs. It provides a uniform and consistent method for identifying and reporting environmental deficiencies and corrective actions.

Oily Waste/Waste Oil. NEESA 20.2-027A provides EFD and activity personnel information and guidance for planning and programming Oily Waste/Waste Oil MILCON projects and for developing OW/WO management plans. A suggested scope of work for an A&E contracted study is provided.

Groundwater Monitoring. Guidance for Groundwater Monitoring, NEESA 20.2-031, presents a means for determining what operations require groundwater monitoring programs, and the requirements for site investigation, well installation, and groundwater monitoring and reporting.

NEPSS CLEAN SLATE

Naval Facilities Engineering Command
Naval Energy and Environmental Support Activity
Port Hueneme, CA 93043

Officer in Charge
LCDR J. P. Collins, CEC, USN

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AUTOVON 360-3952

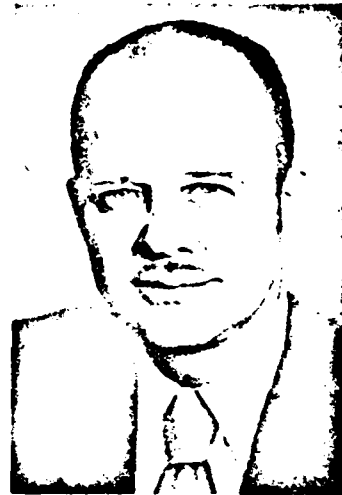
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RECOGNIZING HEALTH HAZARDS

Part I: Typical Chemical Hazards

Recognition of the environmental stresses to which workers may be exposed is essential in establishing an effective industrial hygiene program to meet the OSHA requirements.



By J. B. Olishifski, P.E.,
Director, Industrial Hygiene,
National Safety Council.

THE VARIOUS ENVIRONMENTAL factors or stresses that may cause sickness, impaired health, or significant discomfort or inefficiency in workers may be classified as chemical, physical, biological, or ergonomic.

Chemical hazards would be excessive air-borne concentrations of mists, vapors, gases, or solids in the forms of dusts or fumes. In addition to the hazard of inhalation, many of these materials may act as skin irritants or may be toxic by absorption through the skin.

Physical hazards would include excessive levels of electro-magnetic and ionizing radiation, noise, vibration, and extremes of temperature and pressure.

Biological hazards would include insects, molds, fungi, and bacterial contamination including such sanitation and housekeeping items as potable water, removal of industrial waste and sewage, food handling, and personal cleanliness. (Biological and chemical hazards overlap.)

Ergonomic hazards would include

improperly designed tools or work areas. Unnecessary lifting or reaching, poor visual conditions, or repeated motions in an awkward position may be responsible for accidents in the occupational environment. Designing the tools and the job to be done to fit the man should be of prime importance. Intelligent application of engineering and biomechanical principles are required to eliminate hazards of this kind.

Exposure to many of the harmful stresses or hazards listed may produce an immediate response due to the intensity of the hazard; or the response may result from longer exposure at a lower intensity.

Basically, an effective industrial hygiene program would consist of knowledge and recognition of health hazards arising out of work operations and processes, evaluation and measurement of the magnitude of the hazard—based on past experience and study—and control of the hazard by isolation, substitution, change of process, local exhaust ventilation, general ventilation, training, and education.

mental health hazards arise from inhaling chemical agents in the form of vapors, gases, dusts, fumes, and mists or by skin contact with these materials.

In order for the harmful agent to exert its toxic effects it must come into contact with a body cell. The three routes of entry are:

- Inhalation;
- Skin absorption;
- Ingestion.

EDITOR'S NOTE: Part II of this article will cover physical and ergonomic factors or stresses that should be considered in evaluating the degree of hazard present at the workplace.

National Safety News, November 1972

Chemical Stresses

The majority of the environ-



Diagram showing types of environment factors or stresses to which workers may be exposed.

Toxic Substances List

The Occupational Safety and Health Act of 1970, Section 20(a) (6), requires that "the Secretary of Health, Education, and Welfare shall publish within six months of enactment of this act and thereafter as needed, but at least annually, a list of all known toxic substances by generic family or other useful grouping, and the concentrations at which such toxicity is known to occur." The first such list was prepared in 1971. The 1972 edition represents a substantial revision and expansion of the earlier list. Under the OSHA Act, the Secretary of Labor must issue regulations requiring employers to monitor employee exposure to toxic materials and to keep records of any such employee exposure. This requirement is set forth in Section 8(c) (3) of the act.

The purpose of The Toxic Substances List is to identify "all known toxic substances" in accordance with definitions that may be used by all sections of our society to describe toxicity. It must be emphatically stated that the entry of a substance on the list does not automatically mean that it is to be avoided. A listing does mean, however, that the listed substance has the documented potential of being hazardous if misused, and, therefore, care must be exercised to prevent tragic consequences.

The absence of a substance from the list does not necessarily indicate that a substance is not toxic. Some hazardous substances may not qualify for the list, because the dose that causes the toxic effect is not known.

Other chemicals associated with skin sensitization and carcinogenicity may be omitted from the list, because these effects have not been reproduced in experimental animals, or because the human data are not definitive. Of necessity, there had to be reliance on the published comments and evaluations of the scientific community; also, there has been no attempt at an evaluation of the degree of hazard that might be expected from substances on the list—that being an ultimate goal of the hazard evaluation studies.

It is not the purpose of the list to quantitate the hazard by way of the toxic concentration or dose that is presented with each of the substances listed. Hazard evaluation involves far more than the recognition of a toxic substance and a knowledge of its relative toxic potency.

It involves a measurement of the quantity that is available for absorption by the user, the amount of time that is available for absorption, the frequency with which the exposure occurs, the physical form of the substances, and the presence of other substances, toxic or non-toxic, additives, or contaminants.

Ventilation, appropriate hygienic practices, housekeeping, protective clothing, and pertinent training for safe handling may diminish any hazard that might exist.

Hazard evaluation requires, therefore, engineers, chemists, toxicologists, and physicians, who have been trained in the fields of toxicology, industrial hygiene, and occupational health, to recognize, measure, and control these hazards.

Many companies employ people with this type of professional background, particularly those companies that routinely handle hazardous chemicals. Other companies acquire occupational health services from the many consulting firms or group medical practitioners as well as from some state and community offices.

In order that all work-places may be evaluated properly, there must be standards for the concentrations of hazardous substances in the occupational environment. Approximately 500 start-up standards for the most common hazardous substances have been published in the various amendments to Part 1910 of Title 29—"Occupational Safety and Health Standards," *Federal Register*, Volume 36, No. 157, pages 15,101 through 15,104, Aug. 13, 1971.

Development of criteria documents, which are used as a basis for preparing new standards for substances or for recommending more complete standards, is a continuing NIOSH activity under OSHA Act.

These criteria documents are publications that are prepared from a critical evaluation of all published medical, biological, engineering, chemical, and trade information and data for the purpose of establishing the concentration of a substance in the occupational environment that has been found to cause no harmful—"toxic"—effects in people working for eight hours per day, five days per week, for a normal work life.

In order to assure that the standards promulgated reflect the best information available at the time of preparation, all individuals with publicly available information should respond to notices published in the *Federal Register*.

In assuring that the most valid information is used, an advocate-adversary approach is utilized. That is, care is taken to call in expert critics who have specific experience in handling and controlling the hazards of a substance, and who not only represent widely divergent views to the proposed document, but also represent organized labor, industry, government, scientific associations, and universities.

The resulting criteria document thereby provides a valid detailed support for the standard recommended by NIOSH. The Secretary of HEW, after review, then submits the criteria document with the recommended standard to the Secretary of DOL who has responsibilities for promulgating the final standard.

The U. S. Occupational Standard (USOS) includes, within the limits of technical feasibility: the concentration of the substance that has been determined to provide a safe, healthful work environment for all persons; the methods for collecting, sampling, and analyzing for the substance; the engineering controls necessary for maintaining a safe environment; appropriate equipment and clothing for the safe handling of the substance; emergency procedures in the event of an accident; medical surveillance procedures necessary for the prevention of illness or injury from inadvertent over-exposure; the use of signs and labels to identify the hazardous substances.

Section 20(a) (6) of OSHA Act "directs the Secretary of HEW to determine, following a written request by any employer or authorized representative of employees, whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found."

Copies of the directive and forms may be obtained from NIOSH Division of Technical Services, Hazards Evaluation Services Branch, 1014 Broadway, Cincinnati 45202.

Figure 1 is adapted from the introduction to *The Toxic Substances List*, 1972 Edition. Copies available from the U. S. Government Printing Office, Washington, D.C. 20402, and from the U. S. Department of Health, Education, and Welfare, Health Services and Mental Health Administration, National Institute for Occupational Safety and Health, Rockville, MD 20852.

Air-borne chemical agents that enter the lungs can pass directly into the blood stream and be carried to other parts of the body.

The respiratory system consists of all the organs of the body contributing to normal respiration or breathing (see Figure 2). Strictly speaking, it includes the nose, mouth, upper throat, larynx, trachea, and bronchi, which are all air passages or airways. It includes the lungs where oxygen is passed into the blood and carbon dioxide is given off. Finally, it includes the diaphragm and the muscles of the chest, which permit normal respiratory movements.

All living cells of the body are engaged in a series of chemical processes. The name given to the sum total of these processes is *metabolism*. In the course of metabolism each cell requires oxygen and produces carbon dioxide as a waste substance.

Respiratory hazards

Respiratory hazards may be broken down into two main groups (see Table I):

- 1) Oxygen deficiency—where the oxygen concentration (or partial pressure of oxygen) is below that level considered safe for human exposure;
- 2) Air containing harmful or toxic contaminants.

Oxygen-Deficient Atmospheres

Each living cell in the body requires a constant supply of oxygen. Some cells are more dependent on a constant oxygen supply than others. Cells in the brain and nervous system may die after four to six minutes without oxygen. These cells can not be regenerated or replaced, and permanent changes result from such damage. Other cells in the body are not so critically dependent on an oxygen supply, because they can be replaced.

The respiratory system by which oxygen is delivered to the cells, and carbon dioxide removed, is, thus, a very important part of the body.

Normal air at sea level contains approximately 21 per cent oxygen and 79 per cent nitrogen and other inert gases. At sea level and normal barometric pressure (760 milli-

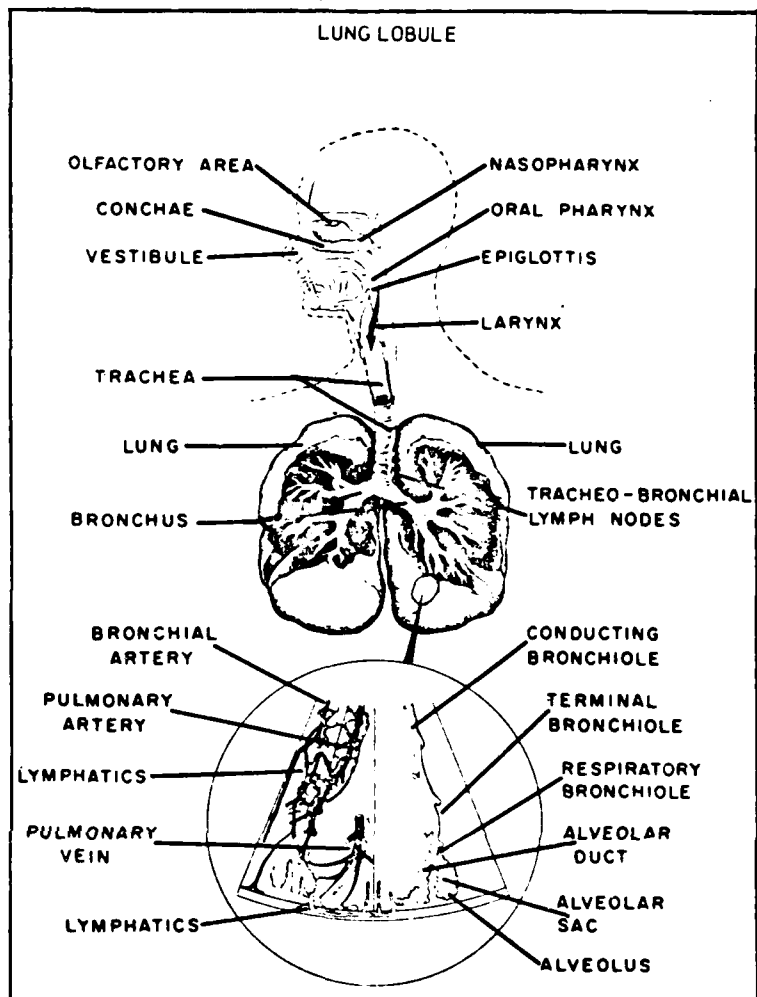


Figure 2—Cut-away illustration of the respiratory system showing the bronchial tree and lung lobule (in circle).

meters of mercury), the partial pressure of oxygen would be 21 per cent of 760 mm., or 160 mm. The partial pressure of nitrogen and inert gases would be 600 mm. (79 per cent of 760 mm.).

At higher altitudes or under conditions of reduced barometric pressure the relative proportions of oxygen and nitrogen would remain the same, but the partial pressure of each gas would be decreased.

The partial pressure of oxygen at the lung surface is critical, because it determines the rate of diffusion through the moist membranes. Men working at reduced pressure are subject to oxygen

starvation, which can have very serious and insidious effects upon the senses and judgments.

Reduced pressure is not the only condition under which oxygen starvation may occur. Deficiency of oxygen in the atmosphere of confined spaces is commonly experienced in industry. For this reason, the oxygen content of any tank or other confined space should be checked before entry is made (see Figure 3). Instruments such as the oxygen analyzer are commercially available for this purpose.

The first physiologic signs of a deficiency of oxygen (*anoxia*) are an increased rate and depth of

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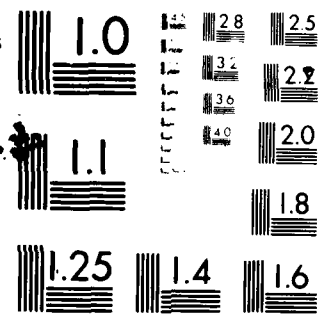
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TABLE I

Classification of Air-Borne Chemical Hazards

Conditions Immediately Dangerous to life or health may result from high-level exposure to most of the named materials, with the probable exception of nuisance or low-toxicity dusts. Such conditions constitute atmospheres that would rapidly lead to death or to injury that would eventually impair health. For example, a 10-minute exposure to 120 parts per million (ppm) of phosgene may be fatal, and exposure to very high concentrations of a radioactive material such as plutonium 239 could present a danger to health from delayed effects of radiation damage to body tissues. The material in this Table is adopted from American National Standard Practices for Respiratory Protection (Z88.2).

Oxygen Deficiency

Occurrence: Confined or unventilated cellars, wells, mines, ship holds, tanks, burning buildings, and enclosures containing inert atmospheres.

Atmospheric O₂ content (per cent by volume) versus expected conditions.

Oxygen content of normal air—20.9 per cent.

Flame of safety lamp or ordinary combustibles extinguished, and symptoms of anoxia begin to appear in humans—16 per cent.

The adverse effects of oxygen deficiency increase with decreasing atmospheric pressure or increased altitude.

Combinations of Gas, Vapor, and Particulate Contaminants

Combination of contaminants may occur simultaneously in the atmosphere. Contaminants may be entirely different substances (dusts and gases from blasting) or the particulate and vapor forms of the same substance. Synergistic effects (joint action of two or more agents that results in an effect that is greater than the sum of their individual effects) may occur. Such effects may require extraordinary protective measures.

Gas and Vapor Contaminants

Asphyxiants: Interfere with utilization of O₂ in the body.

Simple asphyxiants: Physiologically inert substances that do not react with other substances under most conditions and create a respiratory hazard by displacing air and producing oxygen deficiency (for example, nitrogen, methane, helium, neon, argon).

Chemical asphyxiants: Low concentrations interfere with supply or utilization of O₂ in the body (for example, carbon monoxide, hydrogen cyanide, cyanogen and nitriles).

Irritants: Corrosive in action. May cause irritation and inflammation of parts of the respiratory system (also skin and eyes) and pulmonary edema. Irritants can be classified into two types:

Acidic: Substances that are acids or that react with water to produce an acid. They taste sour and many are corrosive to tissues (for example, hydrogen chloride, sulfur dioxide, fluorine, nitrogen dioxide, and acetic acid).

Alkaline: Substances that are alkalis or that react with water to produce an alkali. They taste bitter, and many are corrosive to tissues (for example, ammonia, amines, phosphine, arsine, and stibine).

Anesthetics: High level exposure can cause loss of feeling and sensation with unconsciousness. Hydrocarbon anesthetics can be further classified as: saturated hydrocarbons (methane, ethane, butane), unsaturated hydrocarbons (ethylene, acetylene), alcohols (methyl alcohol, propyl alcohol), ethers (methyl ether, ethyl ether), aldehydes (formaldehyde), ketones (dimethyl ketone), halides (chloroform, carbon tetrachloride), and aromatics (benzene, toluene, xylene). Some anesthetics injure body organs; for example, carbon tetrachloride (liver and kidneys), chloroform (liver and heart), benzene (bone marrow), and carbon disulfide (nervous system).

Systemic poisons: Damage organs and systems in the body; for example, mercury (nervous system and various organs), phosphorous (bone), hydrogen sulfide (respiratory paralysis), and arsine (red blood cells and liver).

Particulate Contaminants

Aerosols: Liquid droplets or solid particles dispersed in air, that are of fine enough particle size (0.01 to 100 microns) to remain so dispersed for a period of time.

Dust: Mechanically produced solid particles with sizes varying from submicroscopic to visible or macroscopic.

Spray: Mechanically produced liquid particles with sizes generally in the visible or macroscopic range.

Fume: Solid condensation particles of extremely small particle size, generally less than one micron in diameter.

Mist: Liquid condensation particles with sizes ranging from submicroscopic to visible or macroscopic.

Fog: A mist of sufficient concentration to perceptibly obscure vision.

Smoke: A system which includes the products of incomplete combustion or organic substances in the form of solid and liquid particles and gaseous products in air.

Relatively inert: May cause discomfort and minor irritation, but generally without injury at reasonable concentration; (for example, marble, gypsum).

Pulmonary fibrosis-producing: Produce nodulation and fibrosis in the lung, possibly leading to complications (for example, quartz, cristobalite, tridymite, asbestos).

Cancer-producing: Produce cancer in some individuals after "latent" period of a few years (for example, asbestos, chromates).

Chemical irritants: Produce irritation, inflammation, ulceration, and so forth, in upper respiratory tract (for example, acid mists, alkalis).

Systemic poisons: Produce pathologic reactions in various systems of the body (for example, lead, manganese, cadmium).

Allergy-producing: Produce reactions such as itching, sneezing and asthma (for example, pollens, isocyanates, gums, spices).

Febrile reaction-producing: Produce chills followed by fever (for example, fumes of zinc and copper and certain resins).

breathing. Oxygen concentrations of less than 16 per cent by volume cause dizziness, rapid heartbeat, and headache. A worker should never enter or remain in areas where tests have indicated such concentrations unless he is wearing some form of supplied air or self-contained respiratory equipment (see Figure 4).

Oxygen-deficient atmospheres may cause an inability to move and a semi-conscious lack of concern about the imminence of death. In cases of sudden entry into areas containing little or no oxygen, the individual usually has no warning symptoms, but immediately loses consciousness, and has no recollection of the incident if he is rescued and revived. The senses cannot be relied upon to alert or warn an individual of atmospheres deficient in oxygen.

Oxygen-deficient atmospheres may occur in tanks, vats, holds of ships, silos, mines or in areas where the air may be diluted or displaced by gases or vapors or where the oxygen may be consumed by chemical or biological reactions.

Air-Borne Contaminants—Breathing of harmful materials may irritate the upper respiratory tract and lung tissue, or the terminal passages of the lungs and the air sacs, depending upon the solubility of the material.

Inhalation of biologically inert gases may dilute the atmospheric oxygen below the normal blood

saturation value and disturb cellular processes.

Other gases and vapors may prevent the blood from carrying oxygen to the tissues or interfere with its transfer from the blood to the tissue, producing chemical asphyxia.

Inhaled contaminants that adversely affect the lungs fall into three general categories:

- 1) Aerosols (particulates), which, when deposited in the lungs, may produce either tissue damage, tissue reaction, disease, or physical plugging;

- 2) Toxic vapors and gases that produce adverse reaction in the tissue of the lungs themselves;

- 3) Toxic aerosols or gases that do not affect the lung tissue but are passed from the lung into the blood stream, where they are carried to other body organs, or have adverse effects on the oxygen-carrying capacity of the blood stream itself.

An example of the first type (aerosols) is asbestos fiber, which causes fibrotic growth in the alveolar tissue, plugging the ducts or limiting the effective area of the alveolar lining. Other harmful aerosols are fungi found in sugar cane residues, producing bagassosis.

An example of the second type (toxic gases) is hydrogen fluoride, a gas that directly affects lung tissue. It is a primary irritant of

mucous membranes, causing chemical burns. Inhalation of this gas will cause pulmonary edema and direct interference with the gas transfer function of the alveolar lining.

An example of the third type is carbon monoxide, a toxic gas passed into the blood stream without essentially harming the lung. The carbon monoxide passes through the alveolar walls into the blood, where it ties up the hemoglobin so that it cannot accept oxygen, thus causing oxygen starvation. Cyanide gas has another effect—it prevents utilization of molecular oxygen by cells.

Sometimes several types of lung hazards occur simultaneously. In mining operations, for example, explosives release oxides of nitrogen. These impair the bronchial clearance mechanism, so that coal dust associated with the explosions is not efficiently cleansed from the lungs.

The physiological reactions caused by the inhalation of airborne matter will vary with different types of gas, vapor, and particulate contaminants (see Table I). The reactions include:

- 1) The cardiopulmonary reactions, which consists of the pneumoconioses such as silicosis and asbestosis. In certain cases, specific types of lung pathology result, and the heart may be affected (cor pulmonale) when the fibrosis is advanced. In other cases, there is mainly just an accumulation of a relatively inert dust in the lungs.

- 2) The systemic reactions, which are caused by toxic dusts of such elements as lead, manganese, cadmium, and mercury, by their compounds, and by certain organic materials.

- 3) Metal fume fever, which results from the inhalation of finely divided and freshly generated fumes of zinc or possibly of magnesium or of their oxides.

- 4) Allergic and sensitization reactions, which may be caused by inhalation of, or skin contact with, such materials as organic dusts from flour, grains, and some woods, and dusts of a few organic and inorganic chemicals.

- 5) Bacterial and fungal infections, which occur from inhalation of dusts containing active organisms such as



Figure 3—The oxygen content of any tank or other confined space should be checked

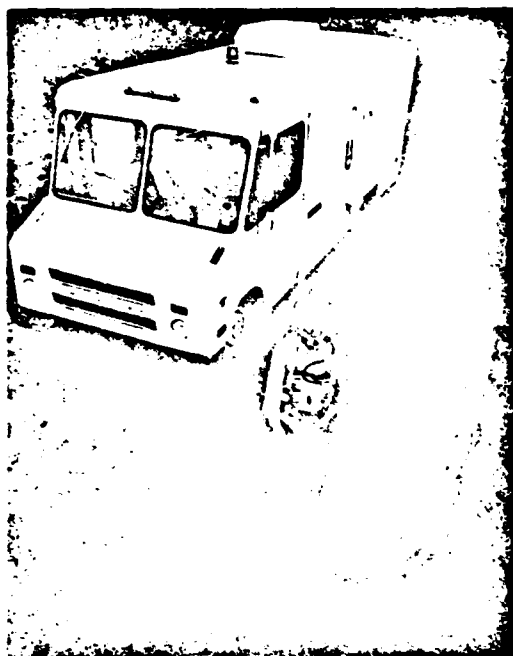


Figure 4—Shown is a completely self-supporting, portable supply system to provide protection for the worker.

wool or fur dust containing anthrax spores, wood bark, or grain dust containing parasitic fungi.

6) Irritation of the nose and throat that is caused by acid, alkali, or other irritating dusts or mists. Some dusts, such as soluble chromate dusts, may cause ulceration of the nasal passages or even lung cancer.

7) Damage to internal tissues that may result from inhaled radioactive materials, such as radium or other isotopes that emit highly ionizing radiation.

Toxic and irritant dusts can also be ingested in amounts that may cause trouble. If the toxic dust swallowed with food or saliva is not soluble in body fluids, it is eliminated directly through the intestinal tract. Toxic materials that are readily soluble in body fluids can be absorbed in the digestive system and picked up by the blood.

A third way in which toxic and irritant substances may enter the human body is through skin absorption. Many organic compounds, such as TNT, cyanides, and most aromatic amines, amides, and phe-

nols, can produce systemic poisoning by direct contact with the skin. Contact of irritant chemical agents with the skin also may result in skin irritation.

Inhalation as a route of entry is particularly important because of the rapidity with which a toxic material can be absorbed in the lungs, pass into the blood stream, and reach the brain. This same material, if ingested, would be considerably diluted with the contents of the stomach.

It is important that all routes of entry be studied when an evaluation of the work environment is being made—candy bars or lunches in work area, solvents being used to clean work clothing and hands, in addition to airborne contaminants in work areas.

Many industrial materials, such as resins and polymers, are relatively inert and non-toxic under normal conditions of use, but when heated or machined, they may decompose to form highly toxic by-products. Information concerning products and by-products can be obtained from the supplier and the chemical and engineering departments within your company.

Solvents

The widespread industrial use of solvents presents a major problem to the industrial hygienist, the safety professional, and others charged with the responsibility for maintaining a safe, healthful working environment. Getting the job done without hazard to employees or property is dependent upon the proper selection, application, handling, and control of solvents and an understanding of their properties.

The term *solvent* refers to those organic liquids commonly used to dissolve organic materials. It includes materials such as naphtha, mineral spirits, gasoline, turpentine, benzene, alcohol, and trichloroethylene.

A good working knowledge of the physical properties, nomenclature, and effects of exposure is very helpful in making a proper assessment of a solvent exposure.

Nomenclature can be misleading. For example, "benzine" is sometimes referred to by the worker as "benzene," a completely different solvent. Some commercial grades of benzine may contain benzene as a contaminant.

It is a good policy to verify from the label, or from the manufacturer, the specific name and composition of the solvents involved.

Manufacturers will usually provide information on the composition of their trade name materials if a confidential request is made.

Labeling

Labeling of solvents to indicate their properties, health, and fire hazards is extremely important for recognizing and evaluating their hazards. In fact, if a solvent is not properly labeled, it should not be used. The purchasing department can greatly help the industrial hygiene or safety department by notifying suppliers *that only properly labeled solvents will be accepted in the plant* (see Figure 5).

A complete list of all solvents used in the plant should be maintained. Where proprietary solvent mixes are utilized, every effort should be made to determine their composition.

With the extensive publicity given to the severe health hazards of carbon tetrachloride, it would seem that everybody should know that this should *not* be used as a general solvent. However, the experience has been repeated at times in which a highly toxic solvent has been substituted by one of less toxicity, but at some later date the more toxic solvent, desirable for good solvent properties or low price, has been brought back into the plant without the health and safety personnel being aware of its re-introduction.

Physiological effects from industrial organic solvent exposures come principally from skin contact and inhalation of the vapors. Ingestion with resultant absorption into the digestive tract is not normally considered a major hazard in industry. If the solvent is present in such amounts that skin contact becomes a hazard, there will probably always be an inhalation hazard.

Inhalation of excessive amounts of solvent vapors may produce various physiological effects.

Narcosis, irritation of the respiratory tract, and asphyxiation characterize the acute effects produced upon high-level exposure to toxic organic vapors. Upon extended

high-level exposures, most organic vapors are capable of producing a gradual, continuous paralysis of the central nervous system. This is expressed in loss of consciousness, or voluntary movements, that may result in respiratory failure.

Many symptoms of narcosis and asphyxiation are quite similar in that the primary effect in each is to impair the functioning of the brain—in narcosis by direct action, and in asphyxiation by denying the brain sufficient oxygen. Asphyxiation may also be brought about by oxygen deficiency or the reduction of the partial pressure of oxygen in the inspired air.

Low level exposures to organic solvents may result in impairments, such as lack of coordination, drowsiness, and similar symptoms that may lead to increased accident proneness. Other effects may include damage of the blood, lungs, liver, kidney, gastro-intestinal system, and other critical organs or tissues.

Degree of severity of solvent hazards depends on the following factors:

- How the solvent is used;
- Type of job operation, which determines how the workers are exposed;
- Work pattern;
- Duration of exposure;
- Operating temperature;
- Exposed liquid surface;
- Ventilation controls in use;
- Evaporation rate of solvent;
- Pattern of air flow;
- Concentration of vapor in workroom air;
- Housekeeping.

The solvent hazard, therefore, is determined not only by the toxicity of the solvent itself but by the con-

METHANOL

**DANGER! FLAMMABLE
VAPOR HARMFUL
MAY BE FATAL OR CAUSE BLINDNESS
IF SWALLOWED
CANNOT BE MADE NONPOISONOUS**

Keep away from heat, sparks, and open flame.
Keep container closed.
Avoid prolonged or repeated breathing of vapor.
Use only with adequate ventilation.

 **POISON** 
Call A Physician
First Aid

If swallowed: Give a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Give two teaspoonfuls of baking soda in a glass of water. Have patient lie down and keep warm. Cover eyes to exclude light.

METHANOL MIXTURES

For products containing methanol in proportion sufficient to create hazard because of methanol content, use applicable statements as above, with addition of:

CONTAINS OVER.....% OF METHANOL

The word "FLAMMABLE" may be omitted from the Statement of Hazards if the product has a flash point above 80°F.

ICA Chemical Safety Data Sheet SD-22 available

Figure 5—Shown above is a typical hazardous chemical label. (Photo courtesy: Manufacturing Chemists' Association)

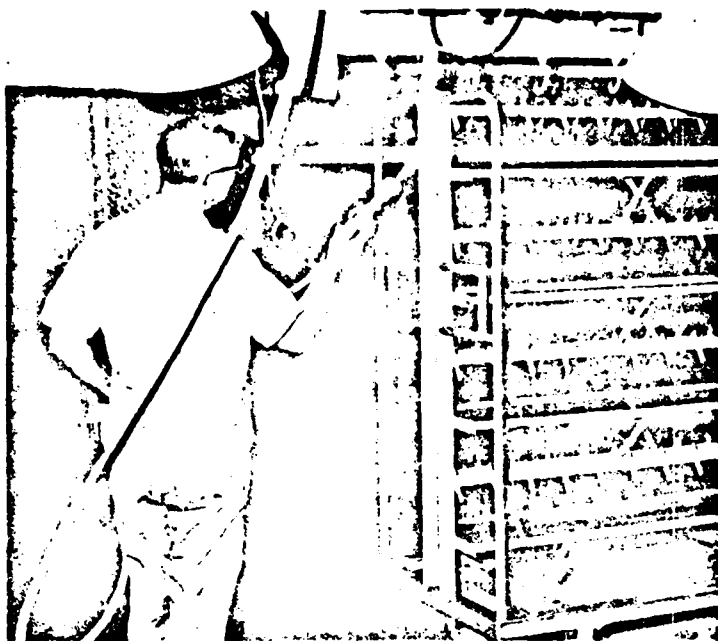


Figure 6—Paint spraying operations in a well exhausted spray booth is an example of where the worker is exposed to a moderate solvent vapor hazard.

ditions of its use—who, what, how, where, and how long.

For convenience, job operations employing solvents may be divided into three categories:

- Direct contact is a consequence of hand operation. Emergency repair of equipment, spraying, or packaging volatile materials without ventilation, cleanup of spills, and manual cleaning using cloths or brushes wetted with solvent are examples where the employees may directly contact the solvent, and be exposed to a severe hazard.

- Intermittent or infrequent contact is encountered where the solvent is contained in a semi-closed system where exposure can be controlled. Paint spraying in an exhausted spray booth, vapor degreasing in a tank with local lateral slot exhaust ventilation, charging reactors or kettles in a batch type operation, and transferring liquids to secondary containers are examples of operations where the worker is exposed only at infrequent intervals, and the hazard is moderate in this case (see Figure 6).

- Minimal hazards are charac-

terized by remote operation of equipment totally isolated from the work area. This type of operation includes directing chemical plant operations from a control room, mechanical handling of bulk packaged materials, and other operations where the solvent vapor is contained in a closed system and is not discharged to the atmosphere in the work area.

Gases

It would seem that due to all the publicity, everybody should be well informed concerning the hazardous nature of carbon monoxide. This gas is responsible for more hazardous exposures and incidents than the sum total of all the other gases. Carbon monoxide is responsible for the greatest number of cases of fatal asphyxiation.

Carbon monoxide

In areas where excessive levels of carbon monoxide may exist, there tends to be an increasing use of automatic monitoring carbon monoxide alarm systems.

Fortunately, for most fuel gas purposes, natural gas is practically in universal use, and this, of course, contains no carbon monoxide. Furthermore, where in earlier years supplementary gas supplies have been provided through water-gas or producer-gas installations, these are today being replaced by liquified petroleum gas systems.

It is, of course, important always to keep in mind that imperfect combustion of natural gas or LP-gas can produce a sufficient amount of carbon monoxide to cause asphyxiation.

Cases of carbon monoxide asphyxiation have occurred over the years on Monday mornings after a weekend shutdown where cold systems (such as furnaces) are being heated with natural gas. Here, the impingement of the burning gas on cold surfaces results in incomplete combustion with markedly greater amounts of carbon monoxide present in the products of combustion.

One part of carbon monoxide gas in 99 parts of air, resulting in a one per cent mixture, would be in the safe range in regards to fire hazard, but it would be deadly (10,000 ppm) in terms of a health hazard. The point here is that, in most cases, by protecting against the health hazard that is keeping the air-borne chemical contaminants within safe limits, the safety professional would eliminate the fire and explosion hazard.

Hydrogen sulfide

Among the gases that might well be listed with those that may cause sudden death upon exposure to relatively moderate concentrations is hydrogen sulfide. Hydrogen sulfide is formed wherever there is decomposition of materials containing sulfur under reducing conditions, and cases of multiple fatalities have occurred.

Wherever operations or processes are such that hydrogen sulfide could be generated, all workers should be briefed about the rapidly asphyxiating properties of this gas. It should be emphasized that at the higher concentrations the sense of smell does not provide the warning to which one is accustomed on exposure to the lower concentrations of hydrogen sulfide (see Figure 7).

Workers should know ahead of time that, if one of them should collapse in some confined area where hydrogen sulfide could be the cause, the fellow workers should not enter the confined area to rescue the victim without adequate respiratory protection.

Dust hazards

To evaluate dust exposures properly requires knowledge of the chemical composition, particle size, dust concentration in air, how it is dispersed, and many other factors described here.

In the case of gases, the concentration that reaches the alveolar sacs will be nearly like the concentration in the air breathed. With aerosols or dust particles this is not the case. Large particles, more than 10 microns aerodynamic diameter, will be deposited long before they reach the sacs, through gravity and impaction. Only the smaller particles will reach the alveoli. In the sacs, Brownian movement of the particles results in deposition by diffusion.

With the exception of some fibrous materials, dust particles must usually be smaller than five microns in order to enter the alveoli or inner recess of the lungs (see Figure 8).

Although a few particles, up to

10 microns in size, may enter the lungs occasionally, nearly all the larger particles are trapped in the nasal passages, throat, larynx, trachea, and bronchi, from which they are expectorated or swallowed into the digestive tract (see Figure 2).

A person with normal eye-sight can detect dust particles as small as 50 microns in diameter. Smaller air-borne particles can be detected individually by the naked eye only when strong light is reflected from them. Dust of respirable size (less than 10 microns) cannot be seen without the aid of a microscope.

Most industrial dusts consist of particles that vary widely in size, with the small particles greatly outnumbering the large ones. Consequently (with few exceptions), when dust is noticeable in the air around an operation, probably more invisible dust particles than visible ones are present.

As a rough approximation, macroscopic particles (those large enough to be visible to the naked eye) are considered to be dispersed by dynamic projection. Microscopic particles (those visible only through a microscope) are considered to have a mass so small that their movement is dependent on the containing air mass. Contaminants, such as the larger dust particles, mists, and

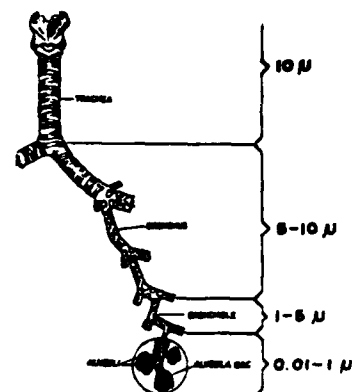


Figure 8—Shows the deposition of air-borne materials inhaled into the bronchial tree according to particle size in microns.

sprays, which are dispersed by dynamic projection, can cause external injury (such as acid burns, eye damage, and dermatitis). The microscopic particles are dangerous to health if inhaled (see Figure 8).

Dust in the air may or may not have the same composition as its parent material. The determining factors are the particle size and density of each component in the original mixture, and the hardness of the material. (Hard materials will resist the pulverizing action of a mechanical device.)

As stated by Hatch and Gross (see Bibliography), the respiratory system serves as the portal of entry into the body for a great variety of air-borne substances, both gaseous and particulate. Many of these atmospheric contaminants are capable of producing injury and disease when they are deposited and accumulate in sufficient amounts in the lungs or, after transfer from the lungs, to sensitive sites deeper within the body. Fine particles, which escape upper respiratory removal, are deposited from the inhaled air at different depths in the respiratory system and in varying degrees. This depends upon a number of factors, including the density, shape, and size of the particles, and the pattern of air flow into and out of the lungs.

There is no simple one-to-one relationship between the concentration of an atmospheric contaminant and duration of exposure and the rate of dosage by the hazardous

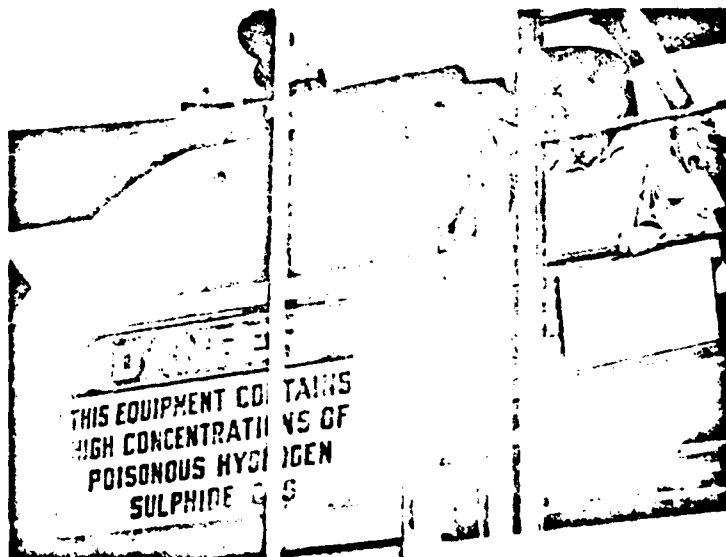


Figure 7—Wherever operations or processes are such that hydrogen sulfide could be generated, all workers should be briefed about the rapidly asphyxiating properties of this gas.

Taking Air Samples To Meet the Test of Time-Weighted Average Concentration

1) There are a number of criteria that must be met by air samples if they are to be of use in the compliance program:

- a) Each must relate directly to the exposure of one employee or more. This means that the sample must usually be taken in the breathing zone of a particular employee. There are instances of nice, even contaminations throughout a working area, but they are extremely rare.
 - b) The volume sampled must be sufficient to permit a good determination of the contaminant sampled if it is present at a concentration equal to the TLV. For this reason you must acquaint yourself with the nature and the sensitivity of the analytical procedure before starting to sample any contaminant.
 - c) The sampling period must usually be such as to give a direct measure of the total exposure of the employees concerned in a full shift.
 - d) The sample must be sealed and identified prior to shipment to the laboratory so that it will be possible to identify positively the laboratory determination with the time and place of sampling and with the individual who took the sample.
- 2) There are various methods for meeting the first criterion. The most satisfactory is the use of a personal sampler with the sampling head as close as is conveniently possible to the employee's head. When the personal sampler is not available or no satisfactory method for use of that kind of sample is available then the method used should approximate the same condition as closely as possible. Impinger tubes, bubblers, or direct reading tubes should generally be hand-held; follow the employee concerned as closely as is possible without interfering with his work or exposing him to an added hazard.
- 3) Area samples, taken by setting the sampling equipment in a fixed position in the work area, are useful as an index of general contamination, but they usually are only remotely related to the actual exposure of the employee who is commonly at the point of generation of the contaminant, and who frequently will have, on exposure, an order of magnitude greater than is indicated by an area sample.
- 4) The second criterion should be fairly self-explanatory. Methods of analysis have definite limits of sensitivity, and if the amount of material present is too small the only reply that the laboratory can give is that the concentration is less than a specified amount. This amount should be something less than the TLV. There is no real disadvantage in an excessively large sample, because it is always possible, and easy, to take an aliquot of anything too large to handle conveniently.
- 5) The third criterion is not nearly so clear-cut as the others. In adopting the Threshold Limit Values of the American Conference of Industrial Hygienists, the department has also adopted the concept of the time-weighted average concentration for a work-day. The same concept is contained in a more specific form in the "Occupational Health and Safety Standard," Federal Register dated

Aug. 13, 1971, page 10,506A, Table G-2. This concept permits limited excursions of concentration above the listed TLV provided that they are compensated by equivalent excursions below the listed value. Limitations on this concept are the listed values preceded by a "C" for ceiling) in the table. "C" values may not be exceeded at any time, and any excursion above the listed value constitutes a violation. The other limitation is a limitation on the size of the excursion. For the TLV's, the permissible size of the excursion is given in the following table:

TLV	0-1	1-10	10-100	100-1000
factor	3	2	1.5	1.25

6) That is to say, if the TLV is 0.1 (either in mg/m³ or in ppm), an excursion to 0.3 for 10 or 15 minutes is permissible provided that it is compensated by an excursion to 0.03 for 43 minutes or, in general—

$$C_a T_a + C_b T_b + \dots + C_n T_n = 8 TLV$$

where:

- T_a is the first time period during the shift;
- C_a is the concentration in period "a";
- T_b is another time period during the shift;
- C_b is the concentration during period "b";
- T_n is the nth or final time period in the shift, and
- C_n is the concentration during period "n".

7) This is simply the summation throughout the work-day of the concentrations encountered in each time interval and adjusted to an eight-hour standard work-day. In practice it may be determined by estimating the concentration for each time interval, and multiplying by the interval in hours; these products for all of the intervals in the work-day added and divided by the eight hours of the standard work-day should give a quotient not larger than the TLV.

8) To meet the test of measuring the time-weighted average concentration the sampling method and period should be chosen to average out these permissible fluctuations and also to measure a representative sample of the fluctuations that will occur in a day's work. There is no magic formula, which will guarantee doing it, but there are some guidelines. If the operation is repetitive, the sampling period should be long enough to cover at least two full cycles of operation and generally not less than 30 minutes. If there is reason to think that there are wide fluctuations in concentration, the long-term samples should be supplemented by samples designed to catch the peaks. If the exposure being measured is from a continuous operation—the exposure of an operator in a chemical plant—it will be necessary to follow the particular operator through two cycles of his operation, or through a full shift if his operations follow a random pattern during the day. For operations of this sort it is particularly important to find out what the workers do when the equipment is down for maintenance or process change. Such periods are frequently also periods of maximal exposure.

FIGURE 9: outlines a method of obtaining air samples that will meet the OSHA requirements. Adapted from Compliance Operations Manual, OSHA-2006, January 1972. United States Department of Labor, Occupational Safety and Health Administration.

agent to the critical site within the body. For a given magnitude of atmospheric exposure to a potentially toxic particulate contaminant, the resulting hazard can range all the way from an insignificant level to one of great danger, depending upon the size of the inhaled particles and other factors that determine their fate in the respiratory system (see Figure 9).

In order to quantify the dose-response relationship at the critical site, one must first estimate how much of the inhaled aerosol is initially deposited and at what sites within the respiratory tract and lungs, and, finally, what fraction of the retained material reaches the critical site within the lungs or other parts of the body to produce damage.

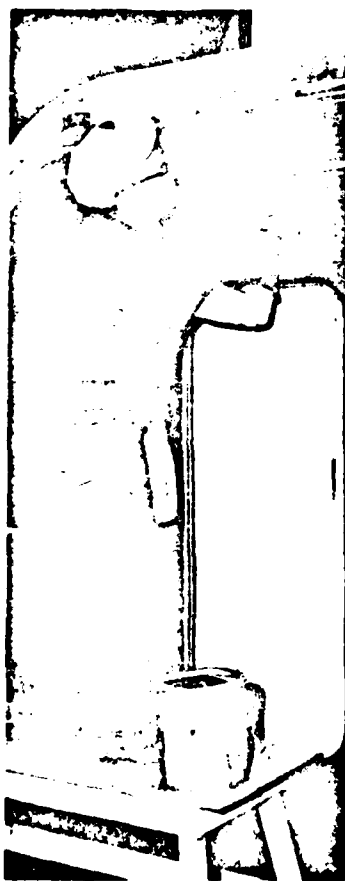


Figure 10—To prevent dermatitis, minimize contact of skin with solvents by wearing proper protective gloves, etc.

Dermatitis hazards

Industrial skin diseases account for about one half to two thirds of all compensation claims for occupational diseases. These claims are scattered throughout all types of industry, and sometimes appear where occupational skin diseases may be least expected. There are two general types of dermatitis—*primary irritation* and *sensitization*:

- *Primary irritation dermatitis*—Nearly all persons will suffer primary irritation dermatitis from mechanical agents such as friction, from physical agents such as heat or cold, and from chemical agents such as acids, alkalis, irritant gases, and vapors. Brief contact with a high concentration of a primary irritant or prolonged exposure to a low concentration will cause inflammation. Allergy is not a factor in these conditions.

- *Sensitization dermatitis*—This is the result of an allergic reaction to a given substance. The sensitivity becomes established during the induction period, which may be a few days to a few months. In most cases, it is ten days to a month. After the sensitivity has become established, exposure to even a small amount of the sensitizing material is likely to produce a severe reaction.

Some substances can produce both primary irritation dermatitis and sensitization dermatitis. Among them are organic solvents, formaldehyde, chromic acid, and epoxy resin systems.

Before new processes are introduced and prior to the adoption of new or different chemicals in an established process, possible dermatitis hazards, including those that may be caused by trace impurities, should be carefully considered. Only a highly skilled and experienced chemist can make analyses for trace impurities, and often this requires highly specialized equipment and techniques. Such analyses are justified, however, by the possibility that considerable benefit may be derived from them. Once the dermatitis hazards have been determined, suitable engineering controls should be devised and built into the processes.

Although general preventive measures can be outlined, it is advisable to solve each exposure prob-

lem individually after complete information on the conditions surrounding the job has been obtained (see Figure 10).

The type and quantity of skin irritants used in various industrial processes affect the degree of control that can be obtained, but the primary objective in every case should be complete elimination of skin contact. The preventive measures include substituting less-toxic materials changing the process, wet methods ventilation, protective ointments, and personal protective equipment.

Some processes may require special control. For example, it is possible to reduce exposure by lowering the temperature of the process and decreasing the air motion around the operation. (Under some conditions, however, decreased air motion may promote rather than reduce exposure. It should be kept well in mind, therefore, that every exposure may require special study.)—End.

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How To Identify Hazardous Waste

By Edward D. Dionne
Associate Editor

UNCLE SAM IS MAD—and he's not going to take it anymore.

When the industrialization of America began 130 years ago, it could not have been imagined that by 1980 hazardous wastes would amount to 60 million tons annually—and it's expected to increase 3.5 per cent each year.

Nor could it have been envisioned that during the decade of the 70's, federal legislation would be required to fight the major problem: Currently 90 per cent of all hazardous waste is being disposed of by environmentally unsound methods, dumped in unprotected pits, ponds, lagoons, or landfills, burned without proper controls, or otherwise mismanaged.

A result of such federal legislation (see Table I), the *Resource Conservation and Recovery Act of 1976* (RCRA) provided Uncle Sam with an effective device to help prevent hazardous waste disasters in the future.

But of more immediate concern, Subtitle C of this act gave the Environmental Protection Agency (EPA) the authority to develop a nationwide program for the regulation of hazardous wastes "from the cradle to the grave"—that is, from the time a hazardous waste is generated

until its final disposal.

On May 19, 1980, EPA published in the *Federal Register* (FR) key regulations that lay the foundation for the entire federal haz-

ardous waste regulatory program. These regulations became effective Nov. 19, 1980, the designated six months after their publication.

TABLE I

RCRA Sections with Significant Impact on Waste Management

RCRA Section	EPA Part	Subject
3001	261	Contains criteria and listing of hazardous wastes
3002	262	Lists standards and responsibilities for generators of hazardous wastes; covers record keeping, manifest system, reporting requirements
3003	263	Sets standards applicable to transporters of hazardous wastes; record keeping, labeling, placarding, coordination with DOT
3004	264, 265	Design, operating standards for Treatment, Storage or Disposal Facilities (TSDF) and related administrative requirements, procedures
3005	122, 124	Describes permit requirements for TSDF and related administrative requirements, procedures
3006	123	Provides guidelines giving individual states responsibility of administering and enforcing RCRA regulations and retaining this authority
3007		Provides inspection authority to EPA and state officers for the collection of samples and filed information; also addresses the extent of confidentiality of information obtained
3008		Discusses enforcement actions, civil and criminal penalties and fines for violators of RCRA. After an unheeded 30-day allowance for corrective action, a violator may be assessed a \$25,000 fine for each day of non-compliance; also, up to one year in prison and the same fine.
3009		Sets up EPA regulations as minimal requirements causing states to align with RCRA
3010	45 FR 12746	Requires that generators, transporters, and owners/operators of TSDF must formally notify EPA of all hazardous waste activities. Federal agencies must also comply with these notification requirements.

EDITOR'S NOTE: This is the first in a series of three articles about the *Resource Conservation and Recovery Act* (RCRA), or Public Law 94-580, and its related federal acts. Part II, to appear next month, will cover such regulations pertaining to transportation of hazardous wastes. Part III, in March, will cover clean-up of spills on the plant site. Much of the material herein was originally presented at seminars on the subjects presented by the E. I. du Pont Chemical Co., Phillipsburg, NJ; and by Unz & Co., Jersey City, NJ, and at the annual meeting of Work Glove Manufacturers Association, Graylake, IL.

Why 'Cradle to Grave?'

The purpose of these regulations is to prevent damage to human health or the environment. Specifically, they seek to prevent such wastes from:

- Contaminating groundwater via leachates;
- Contaminating surface water via runoff or overflow;
- Polluting the air via open burning, evaporation, sublimation, and wind erosion;
- Catching fire or exploding;
- Poisoning via the food chain;
- Coming into contact with humans.

What Is Hazardous Waste?

Section 3001 of RCRA defines and lists solid wastes that are considered hazardous (see accompanying *Hazardous Waste Glossary*). Generally, RCRA defines

such waste as "solid waste that may cause increased mortality and serious illness, or may cause substantial hazard to health or the environment when improperly managed."

Furthermore, EPA defines hazardous waste on the basis of four measurable characteristics for which standardized tests are available: *Ignitability, corrosivity, reactivity, and EP toxicity* as determined by a specific extraction procedure (EP).

What is Listed Where?

Section 3001 contains a detailed listing of specific hazardous wastes that possess any of the four hazardous characteristics, as well as wastes that meet the criteria for an acutely hazardous or toxic material.

The wastes are listed by non-specific sources; by specific sources, such as "slop oil emulsion solids from the petroleum refining industry"; or by substance, "beryllium dust" or "Rat-B-

Gone" (a trademark identification).

Each hazardous waste, from whatever source, has been assigned a hazardous waste number. For example; U200, Reserpine.

Hazardous constituents also are listed, from A (acetaldehyde) through Z (zinc phosphide). These have been shown in scientific studies to have toxic effects on humans or other life forms. Therefore, waste containing any one or more of these constituents in toxic concentrations is undoubtedly listed by EPA as hazardous waste.

The list is available through the Washington, DC office of EPA, or through any of the 10 regional offices of EPA, or directly from the U.S. Government Printing Office, citing 45 *Federal Register* 33066-33588.

Who Is Affected?

The list and characteristics of hazardous waste are to be used by persons who generate, transport, treat, store, or dispose of solid waste, to aid in determining if the waste they handle at any stage is hazardous.

Special rules apply to such wastes generated by small-quantity generators, and to hazardous wastes that are used, reused, recycled, or reclaimed.

The regulations are intended to provide surveillance and control of more than 97 per cent of all such hazardous waste produced in the U.S. each year. Chiefly for administrative reasons, EPA has exempted from coverage the 695,000 generators who produce less than 1,000 kilograms of hazardous waste per month, or less than one kilogram per month to 100 kilograms per month of specified "extremely hazardous waste."

It also is possible for a generator to get an exemption under Section 3001 even if the waste is listed as hazardous; the regulation describes a "delisting" procedure for generators to follow.

Certain wastes (domestic sewage, irrigation return flows, oil



Battelle Memorial Institute (Columbus, Ohio) has conducted scores of hazardous materials studies for industry and government in recent years. Here, scientists use a combined glass capillary column gas chromatograph/high resolution mass spectrometer for the analysis of a toxic dioxin in support of manufacturers' research work. The 2,3,7,8-TCDD isomer of Dioxin is one of the most toxic substances known—more than 200 times deadlier than strychnine. This unique lab features special air conditioning and filtering equipment to avoid any possible contamination. (Photo: Courtesy of Battelle Today).

and gas drilling mud and brines, and others) are not considered hazardous wastes, but they may be controlled under other federal laws, such as the *Clean Water Act*.

Scope of Regulations

The regulations provide special rules for generators and transporters, as distinguished from the more complex rules governing owners or operators of treatment, storage, or disposal facilities (TSDF).

EPA has not overlooked the possibility of generators attempting to avoid ultimate responsibility for disposal of their hazardous waste materials by contracting with certain transportation and disposal companies, which might, in turn, dispose of hazardous wastes in an unsafe or illegal manner. Such unlawful transporters have come to be known as "midnight haulers," for their unscrupulous practice of dumping wastes into roadside ditches or even abandoning trailers loaded with hazardous materials in 55-gallon drums, leaving state

or municipal authorities to best solve the disposal problem.

EPA's regulatory scheme requires the generator of hazardous wastes not only to determine if the generated waste is hazardous, and to obtain an EPA identification number, but also to obtain a facility permit if the waste stays on the generator's property more than 90 days.

EPA requires the generator to identify, store, package, label, transport, dispose of, and report their hazardous waste materials with strict limits—extending to the tracking of each shipment of such wastes transported away from company premises to final disposal site.

To track each shipment, generators must use a special manifest that specifically identifies the waste materials, quantity, date of shipment, the transporter(s), and disposal site. The generator must follow up on each shipment to ensure that the generator receives the final manifest back for record retention purposes. *These requirements cannot be delegated to a transporter or disposal site operator.*

Rules for Generators

Under EPA's regulations, there are four kinds of hazardous waste generators:

- 1) Those who ship their hazardous waste off-site to a disposal facility within 90 days of accumulation;
- 2) Those who store at least some of their hazardous waste on-site for longer than 90 days, but eventually dispose of it off-site;
- 3) Those who treat at least some of their hazardous waste on-site;
- 4) Those who dispose of at least some of it on-site.

As explained to members of the Work Glove Manufacturers Association attending WGMA's Fall Meeting at Chicago last November 19, the day cradle-to-grave regulations went into effect, "generator means any person, by site, whose act or process produces hazardous waste identified or listed in Part 261 of RCRA, or whose action first causes a hazardous waste to become subject to regulation" (40 CFR Section 260.10)."

WGMA members were advised, "Any company that produces solid waste should proceed through the following steps to determine whether it also is a generator of hazardous waste subject to the regulations:"

1) Determine whether the company produces a solid waste as defined by the regulations (40 CFR Section 262.11).

a) Is the solid waste in question excluded from regulation? (See CFR 261.4 and 261.5).

b) If not excluded, is the solid waste in question listed as a hazardous waste in the regulation? (Subpart D of 40 CFR Part 261).

c) If not listed, then the generator must test whether the solid waste exhibits one of the four hazard characteristics (ignitability, corrosivity, reactivity, or extraction procedure (EP) toxicity) adopted by the regulations (Subpart C of 40 CFR Part 261).

2) Upon determining that the company generates a hazardous waste covered by the regulations,

Hazardous Materials Guide

EPA—U.S. Environmental Protection Agency

—Washington Office (202) 755-0707

—Toll-free number (800) 424-9065

—EPA Hotline (800) 424-9346

DOT—U.S. Department of Transportation—Hazardous Materials Office (202) 426-0656

—DOT Hazardous Materials Hotline (800) 424-9158

CHEMTREC—Chemical Transportation Emergency Center (600) 424-9300

SECK AND CHED—Hazardous Waste Dumping

40 CFR—Protection of Environment: EPA's annually revised final regulations

49 CFR—Transportation;

DOT's annually revised final regulations

RCRA—Resource Conservation and Recovery Act; became Public Law 94-580 on Oct. 21, 1976

TSCA—Toxic Substances Control Act; became law on Oct. 11, 1976.

CAA—Clean Air Act (1970)

RRA—Resource Recovery Act (1970)

FWPCA—Federal Water Pollution Control Act (1973)

HMTA—Hazardous Materials Transportation Act (1974)

SDWA—Safe Drinking Water Act (1976)

SWDA—Solid Waste Disposal Act (1976)

CWA—Clean Water Act (1977)

SHWP—State Hazardous Waste Program (1970)

the generator must apply to the Administrator of EPA for an identification number (form 8700-12). After Nov. 19, 1980, a generator must not treat, store,

dispose of, or transport hazardous waste or offer it for transportation without first having obtained an EPA identification number (40 CFR 262.12).

3) The generator must prepare a manifest containing specified information to accompany the hazardous waste whenever it is transported off-site (40 CFR 262.20).

Hazardous Waste Glossary

(Source: *Environment Midwest*, August 1980, Region V Office of EPA, 230 S. Dearborn St., Chicago 60604)

HWMF—Hazardous Waste Management Facility

NPDES—National Pollution Discharge Elimination System.

PCB—Poly-Chlorinated Biphenyls

TSDF—Treatment, Storage, or Disposal Facility

UIC—Underground Injection Control

Disposal—The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid or hazardous waste into or on any land or water so that such wastes or their components may enter the environment or be emitted into the air, or be discharged into any waters, including groundwater.

Disposal Facility—A facility or part of a facility at which hazardous waste is intentionally placed into, or on any land or water, and at which waste will remain after closure.

EPA Identification Number—A number assigned by EPA to each generator, transporter, and treatment, storage, or disposal facility.

Facility—All contiguous land, structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste.

Generator—Any person, by site, whose act or process produces hazardous waste identified, defined, or listed in EPA regulations.

Hazardous Waste—Solid waste that is included in a list of specific hazardous wastes (waste streams, waste sources, and certain generic wastes) or solid waste that is ignitable, corrosive, reactive, or toxic as determined by a specified extraction procedure (EP), or solid waste that is declared hazardous by the generator on the basis of the materials or process used in producing the waste.

—**Ignitable**: Posing a fire hazard during routine management.

—**Corrosive**: Having the ability to corrode standard containers, or to dissolve toxic components or other wastes.

—**Reactive**: Having tendency to explode under normal management conditions, to react violently when mixed with water, or to generate toxic gases.

—**EP Toxicity**: Presence of certain toxic materials at levels greater than those specified in EPA regulations.

Management—Systematic control of the collection, source separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous waste

Manifest—Shipping document originated and signed by the hazardous waste generator, and containing information required by EPA regulations.

Open Dump—An unregulated and uncontrolled site that was used for the mixed disposal of municipal, commercial, and industrial refuse and chemical wastes. Operation of these dumps is prohibited under RCRA and other federal and state laws.

Operator—Person responsible for the overall operation of a facility.

Owner—Person who owns a facility or part of a facility.

Sanitary Landfill—A site used for the disposal of municipal, commercial, and industrial solid refuse and non-hazardous solid waste as defined by EPA. Incorporates some provision for controlling ground water contamination. Daily deposits of refuse are covered with soil.

Secure Chemical Landfill—A site prepared or selected to isolate hazardous chemical wastes from the surrounding environment. Includes natural and/or artificial liners and specific design provisions for collection and treatment of liquids (*leachate*) retained in the landfill cell. Secure landfills are used for hazardous and chemical wastes exclusively, with specific monitoring of groundwater in the area.

Solid Waste—Any garbage, refuse, sludge from a waste water treatment plant, water supply treatment plant, or an air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, or mining and agricultural operations, and from community activities.

Storage—The holding of hazardous waste for a temporary period at the end of which such waste is treated, disposed of, or stored elsewhere.

Transportation—The movement of hazardous waste by air, railway, highway, or water.

Transporter—Person engaged in the off-site transportation of hazardous wastes by air, rail, highway, or water.

Treatment—Any method, technique, or process—including neutralization—designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste or to recover energy or material resources from the waste, or to render such waste nonhazardous or less hazardous, safer to transport, store, or dispose of, or to make it amenable to recovery or storage or to reduce such waste in volume.

4) The generator also must package the hazardous waste, label, and mark the packages, and prepare placards, all in accordance with applicable Department of Transportation regulations (40 CFR 262.30-33).

5) Generators who accumulate hazardous waste on-site for less than 90 days must comply with temporary storage requirements (40 CFR 262.34).

6) The generator must keep records and file reports in accordance with the regulations (40 CFR 262.40, 262.41; 262.42).

7) Special conditions apply to generators shipping hazardous waste outside the United States and to those who receive international shipments of hazardous waste (40 CFR 262.50).

8) Generators who store hazardous waste on-site for longer than 90 days are operators of a storage facility and must comply with the more stringent and complex regulations governing such operators, including the requirements of obtaining a permit to operate a storage facility. *Any such generator who has not filed an application for a permit by Nov. 19, 1980, may not legally store hazardous waste for longer than 90 days until EPA actually issues a permit.* (EPA has indicated that it may take up to several years to issue actual permits. Those who have filed an application may continue operating on "interim status" until action is taken on their application. Special regulations pertaining to "accumulation time" for generators are covered under 40 CFR 262.42).

9) Similarly, generators who treat or dispose of hazardous waste on-site must comply with the regulations governing treatment and disposal facilities. WGMA members were advised.

EPA has stated that 60 per cent of all hazardous waste comes from the chemicals and allied products industry, which manufactures such common materials as plastics, fertilizers, pesticides, synthetic fibers, medicines, explosives, cosmetics, paints, detergents, and many other products. Hazardous waste is also gener-

ated by agriculture, hospital, non-electrical machinery, primary metals, paper, and still more industries, EPA adds.

Current estimates show that last year U.S. industry generated almost 60 million metric tons (wet) of hazardous waste. About 60 per cent of such waste is liquid or sludge. Quantities of hazardous waste are expected to increase by about 3.5 per cent annually. Much of this increase is attributed to sludge from equipment required for air and water pollution controls—resulting in a troublesome form of perpetual motion.

EPA estimates that currently the country's hazardous wastes are being produced by some 270,000 industrial facilities. In addition, says EPA, there are about 10,000 shippers that transport such wastes, and perhaps 30,000 operators of facilities that store, treat, or dispose of these.

But EPA believes that only a

small percentage of current hazardous waste is being controlled and safely disposed of in approved waste sites. The six states comprising EPA's Region V (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin) have already established a program asking the general public to report suspected illegal dumps. Termed "Seek and Find," it utilizes toll-free "hotline" telephones to receive such calls. The idea is expected to spread to all other EPA Regions.

Although some 75.3 per cent of hazardous wastes in the U.S. are generated East of the Mississippi River, and the remaining 24.7 per cent in the West, the effects of the "cradle-to-grave" controls are expected to touch virtually every industry and municipality in the nation.

Next month NSNEWS will discuss the restrictions placed by RCRA upon transporters and facility operators. □

Insidious Chemical Hazards

C Sometimes, laboratories staffed by trained, knowledgeable people can be booby trapped unintentionally. Here are some little-known examples.

SAFE STORAGE AND DISPOSAL of large amounts of hazardous wastes has recently—and properly—been in the public eye.

But storage and disposal of small amounts in the lab and hospital can be just as tricky and hazardous.

In fact, use of toxic materials by research-oriented personnel who feel totally at home with the substances can lead to insidious hazards or booby traps.

A seminar offered by the J. T. Baker Chemical Co., Phillipsburg, NJ, discusses the following types of booby traps possible in labs and hospitals.

Explosive: A typical example of a common laboratory substance that can become an explosive is sodium azide, used as a slime-azide. This substance is innocuous until it comes into contact with a heavy metal—such as lead or copper found in plumbing systems pipes. Sodium azide accumulates in the pipes, reacts with the metal, and becomes lead or copper azide. These products are more powerful than nitroglycerine. In addition, they are more sensitive to detonation by contact than both nitroglycerine or mercury fulminate. Maintenance or repair of contaminated plumbing systems have resulted in powerful explosions. Another example of an insidious lab or hospital explosive hazard is an open can of ether. This condition causes the formation of peroxides, which are sensitive explosives. Other such dangerous substances include acetylene and perchloric acid. Decontamination procedures for the first mentioned hazard can be found in: *Proce-*

*dures for the Decontamination of Plumbing Systems Containing Copper and/or Lead Azides** or obtained from your chemical supplier.

Ventilation: Any given laboratory hood may not be designed to ventilate effectively for the chemical being used. The vent may be too high to remove flammable, toxic, or nauseous fumes. An inexpensive velometer can be used to see that air flow is from 125 to 150 cfm. In addition, newer lab hoods provide built-in washdown systems and velometers.

Toxic vapors: Working with mercury demands extra care and very thorough clean up of spills. The substance, when spilled, breaks up into microscopic droplets and vaporizes quickly. Mercury vapor is highly toxic and reaches its TLV quickly. It is so toxic that one cubic centimeter can contaminate nine million cubic feet.

The "too much" syndrome: Often, there is much more of a substance on hand than is needed for a given job. Large quantities of materials, particularly of flammable or interactive materials, would provide the fuel for a large fire if an accident occurred.

Safety equipment: It's a good practice to assume that safety equipment—such as emergency showers and respirators—are not working until they have been checked. It's also a good idea to train personnel to get SCBA apparatus operational quickly.

Labeling: Unfortunately, inadequate or non-existent labeling is the case in too many labs. There are many containers marked with a chemical symbol instead of

words, and too many "mystery containers." An example of the danger of inadequate labeling is the janitor who tried to clean jewelry with a substance from a solution marked "Cleaning Solution." The substance was potassium dichromate and concentrated sulfuric acid, which will dissolve anything but glass. What if the janitor had used it to clean his hands?

Spills: Chemical "spills" should be planned, that is, personnel should be trained and rehearsed in proper procedures in case of a spill of a hazardous substance.

Improper storage and incompatibility: Quite often, chemical storerooms in laboratories have the substances arranged in alphabetical order, which leads to highly interactive materials being placed next to one another—in glass containers.

Training: Hazards can be perpetuated by poor training or training that does not go far enough. An example of training that didn't go far enough is the case of the electrician who locked-out the power before entering a room designated as hazardous—and was exposed to cobalt 60. He followed his training correctly by locking-out before entering the room. But he should have been told also to activate the interlocked alarms *before* locking-out so that the cobalt 60 would have automatically dropped into its lead pig before he entered the room.

Building design: "Interesting" things can happen when a laboratory is renovated. The Baker lecturers cited a chemical classroom that was modernized to include an emergency shower located just outside the classroom. Unfortunately it was also located over an electrical outlet. □

EDITOR'S NOTE: This article was prepared from notes taken at a seminar, *Hazardous Chemical Safety*, given by Frank E. Reilly, PE, CSP, and Jack Bulloff, Ph.D., for J. T. Baker Chemical Co., Phillipsburg, NJ.

*Copies available from NIOSH, 5600 Fishers Lane, Rockville, MD 20852.

Transporting Hazardous Materials

By Edward D. Dionne,
Associate Editor

EVERY DAY, thousands of tons of hazardous wastes and chemicals are transported throughout the U.S., in containers ranging in size from test tubes or small vials sent through the mail, 55-gallon drums shipped via trucks, and in 33,000-gallon railroad tank cars. Additional hazardous waste remains at plant sites, stacked in drums or settling in special retaining lagoons.

Such materials may include flammable liquids and solids, compressed gases, corrosive liquids, and other substances that may be poisonous, radio-active, oxidizing, or explosive. In many cases, such material has been considered abandoned—out of sight, out of mind.

But now, under the *Resource Conservation and Recovery Act (RCRA)*, hazardous wastes must be controlled "from cradle to grave," through the use of a comprehensive manifest and reporting system. The burden of compliance with such regulations is on the generator. Such responsibility does not end when hazardous wastes are turned over to a transporter.

Rules for Generators

The regulations issued under Section 3002 of RCRA outline certain things that a generator of hazardous waste must do.* A generator is responsible for:

- Determining if the waste generated is hazardous;
- Obtaining a facility permit if waste stays on the generator's property more than 90 days;
- Obtaining an EPA identification number;
- Using appropriate containers

*See "How to Identify Hazardous Waste," NATIONAL SAFETY NEWS, January 1981, pp. 37-41

and labeling them properly for shipment;

- Preparing a manifest for tracking hazardous waste;
- Assuring, through the manifest system, that the waste arrives at the designated facility;
- Submitting an annual summary of activities to EPA.

When waste leaves the generator's site, the generator must—in addition to preparing a manifest (shipping form)—use only transporters with EPA identification numbers, keep records of all hazardous waste shipments and report such shipments that do not reach the facility shown on the manifest.

A generator who treats, stores, or disposes of hazardous waste on site also must comply with requirements of RCRA Sections 3004 and 3005. Section 3004 sets standards for all owners or operators of facilities that treat, store, or dispose of hazardous waste. Section 3005 pertains to permits for such facilities.

Rules for Transporters

Section 3003 of RCRA, concerning standards for transporters of hazardous waste, was developed jointly by EPA and the U.S. Department of Transportation (DOT).

Under Section 3003, the transporter of hazardous waste must:

- Obtain an EPA identification number;
- Comply with the manifest system of tracking hazardous waste;
- Deliver the entire quantity of hazardous waste to the facility designated by the generator upon the manifest;
- Retain a copy of the manifest for three years;
- Comply with DOT regulations pertaining to reporting of discharges and spills;

- Clean up any hazardous waste discharged during transportation.

A discharge is defined as *accidental or intentional spilling, leaking, pumping, emitting, emptying, or dumping of hazardous waste onto, or into, the land or water*. A written report of such discharge must be submitted to DOT, which will forward a copy to EPA.

Options for Disposal

In order of priority, the desired options for disposal of hazardous waste, as recommended by EPA, are:

- 1) Minimize the amounts generated by modifying the industrial process involved.
- 2) Transfer the waste to another industry that can use it.
- 3) Reprocess the waste to recover energy or materials.
- 4) Separate hazardous from non hazardous waste at the source and concentrate it, which reduces handling, transportation, and disposal costs.
- 5) Properly incinerate the waste, or subject it to treatment that makes it non-hazardous.
- 6) Dispose of the waste in a secure landfill, i.e., one that is located, designed, operated, and monitored (even after it is closed) in a manner that protects life and

EDITOR'S NOTE: This is the second in a series of three articles about the *Resource Conservation and Recovery Act (RCRA)*, and its effect upon industry. Last month, NSNWS explained "How to Identify Hazardous Waste." Next month's article will cover cleanup of spills in the plant laboratory and yard area. Much of the material herein was presented at seminars on the subjects conducted by J.T. Baker Chemical Co., Phillipsburg, NJ, and by Taggart Associates, a Division of Lion Technology, Inc., Dover, NJ.

the environment.

The Manifest System

The cradle-to-grave control of hazardous waste is based upon the reporting of such material handling through a manifest system. The manifest is a shipping form that accompanies hazardous waste from generator to transporter, and then to off-site treatment, storage, or disposal facilities.

Once hazardous waste is ready for shipment, the generator is responsible for preparation of the manifest, which must contain:

- Name and address of the generator;
- Names of all transporters involved;
- Name and address of the permitted facility designated to receive the waste. (An alternate facility may be designated if an emergency prevents the use of the first facility);
- EPA identification numbers of all who handle the waste;
- DOT description of the waste;
- Quantity of waste and number of containers;
- The generator's signature certifying that the waste has been properly labeled, marked, and packaged in accordance with EPA and DOT requirements.

Shipment via Roadways

Normally, if a generator of hazardous waste disposes of the waste on its own property adjacent to the plant, then a manifest is not required. But, if the waste has to be shipped to the generator's property—or to someone else's property—via a public right-of-way where DOT has jurisdiction, then a manifest must be prepared.

However, a generator who does not ship wastes, but disposes of them on-site, must get an EPA permit and comply with the facility reporting requirements of RCRA.

When the hazardous waste is ready to be shipped, the generator signs the certification on the original manifest and on all copies, one for each person handling the waste. The transporter then signs and dates the manifest, and returns one copy to the generator. The generator retains this copy until a copy is received from the designated permitted facility following delivery of the waste.

The transporter carries the manifest to the designated facility. When the shipment arrives, an agent for the facility signs and dates each copy, and retains one copy. The transporter also gets one copy, which must be retained for three years. Another copy is returned to the generator by the facility's agent.

If, for some reason, a hazardous waste shipment does not reach the facility designated on the manifest, the generator must notify EPA.

If more than one transporter is involved, then the first transporter must obtain on the manifest the dated signature of the subsequent transporter. The remaining copies accompany the waste until it reaches the designated facility.

Rail, Water Shipments

The manifest system as discussed pertains to shipment by truck via public highways. Slightly different rules apply to other modes of transport. For shipment of hazardous waste by rail or bulk shipment by water, no manifest is required. However, a shipping paper that contains all the information as on the manifest—except EPA identification numbers, generator certification, and signatures—must accompany the waste shipment. If transportation other than by rail or water is used at any stage of the shipping process, then a manifest must accompany the waste at all times.

All rail and water transporters are required to keep a copy of the shipping paper (or the manifest) for three years from the date of acceptance.

RCRA requires mandatory training of company officers, agents, and employees having

any responsibility for preparing hazardous materials for shipment or while in transit.

Because such regulations are comprehensive, many plants are creating "experts" in each of these categories: packaging, marking, labeling, placarding, manifests, and permits.

Still other plants have gone a step beyond this requirement and also are using consultants who are immediately available for solving specific problems.

Marking, Labeling, and Placarding

Because the RCRC and DOT regulations constantly are being updated, revised, or even eliminated, procedures on marking, labeling, and placarding should be confirmed periodically with local offices of EPA and DOT. Refresher seminars are held by organizations specializing in this field.

Whatever the source of such expertise, plant safety specialists will find useful the following references:

- **Hazardous Materials Table**—49 CFR 172.101 (May 22, 1980 updated edition). Contains alphabetical listing of hazardous materials, their descriptions, proper shipping names, hazard class, labels if required or if exempted, and section and paragraph references for packaging requirements and exceptions, maximum net quantity permitted in one package for passenger-carrying aircraft, cargo-only aircraft, railcar, shipments via water cargo vessels or passenger vessels, and other specific requirements.

- **Marking**—49 CFR Subpart D 172.300.

- **Labeling**—49 CFR Subpart E 172.400.

- **Placarding**—49 CFR Subpart F 172.500.

Complicating the many detailed regulations for marking, labeling, and placarding are additional rules pertaining to the type of container involved. Special rules pertain to steel, corru-

gated fiber board, and polyethylene containers, fiber drums, and gas cylinders.

Further, DOT has issued a listing identifying 20 hazard classes. These include: Class A, B, C explosives; combustible liquid, corrosive material, flammable liquid, pyroforic liquid, compressed gas, flammable gas, nonflammable gas, flammable solid, organic peroxide, oxidizer, poison (A and B), irritating material, etiologic agent, radio-active material, and other regulated materials, (ORM) in classes A, B, C, D, and E.

A similar listing of definitions of radio active materials also has been issued by DOT.*

Only after the safety specialist or other personnel responsible for proper shipment of hazardous waste has become familiar with such definitions, should the matters of marking, labeling, and placarding be undertaken.

Marking

Marking, as addressed in the RCRA/DOT regulations, refers to the application of descriptive information, instructions, cautions, weight, retest dates, or combinations thereof on outside packages as required by 49 CFR Parts 100-199 (especially Subpart D, Section 172.301). Marking also means applying the specification marks for both inside and outside containers as required. This definition does not include the requirements for labeling and placarding, as set forth in 49 CFR Parts 100-199.

General description information pertaining to marking is found in Sections 172.301 and 172.304. Such information states:

- All containers of hazardous materials must, unless specifically excepted, be marked with the proper shipping name of the contents and the name and address of either the consignee or consignor. This marking must be:

—Durable, in English, and printed on or affixed to the surface of a package or on a label, tag, or sign;

—In a color sharply contrasting to its background;

—Unobscured;

—Away from other markings which will reduce its effectiveness.

Packages containing inside containers which hold liquid materials are covered under Section 172.312.

Other marking regulations include:

- Export by water—172.302.
- Radio-active materials—172.310.
- ORM materials—172.316.
- Authorized containers in outside packages—173.25.
- Gas cylinders—173.34, 173.34 (e)(6), and 173.301.
- Portable tanks—172.326.
- Cargo tanks containing gases—172.328 (c) (d), and 178.337-9 (c).
- Tank cars—172.330
- Requalified containers—173.24, 173.31, 173.32, 173.33, and 173.34.
- Reuse of containers—173.28
- Cargo heaters—177.834 (1) (2) (i).
- Motor vehicles—177.823.
- Specification containers—171.12, 173.8, 173.24, 178, and 179.

Warning labels

The DOT hazardous materials warning labels specifications are based upon the United Nations Labeling System, and are authorized for domestic and foreign shipments. Hazardous materials class numbers are required by some foreign governments. The labels may be over stamped or over-printed with the appropriate hazard class number located in the bottom corner of the label (Section 172.407 (g)). All such

labels are diamond shaped. They must be at least four inches square, and have a solid line border of at least three-and-one-half-inches-long on each side. The bottom half of the DOT diamond-shaped labels may be printed in the language of the country of origin. Also spelled out are special requirements for bung labels (Section 173.119 (i) "empty" labels, (Sections 172.450 and 173.29); etiologic agent labels, (Section 172.444); and cargo aircraft only labels (Section 172.448).

Except as otherwise provided in this subchapter, any person who offers a package, overpack, or freight container containing a hazardous material for transportation shall label it according to Subpart B, Section 172.101.

Multiple labeling is involved if a package contains a material meeting the definition of more than one hazard class. Section 172.402 (a) is applicable. Examples include an Explosive A, Poison A, or radio-active material.

Mixed packaging is involved when hazardous material having different hazard classes is packed within the same packaging, or within the same outside container or overpack as described in 173.25 and authorized by 173.21. Covering this situation is Section 172.404 (a).

Radio-active material may be exempted from labeling by 173.391 or 173.392. Otherwise, it is covered by 172.403 (a). Section 172.401 (a) points out that no person may offer for transportation, and no carrier may transport any package bearing a label specified as hazardous unless the package does, indeed, contain a material that is hazardous.

Each label as required must be printed on or affixed to the surface of the package near the "market proper shipping name," states Section 172.406 (a).

DOT also advises that exported shipments by water or air to foreign destinations may be rejected if they bear warning labels other than those DOT has approved.

For import shipments only, a label conforming to 172.401, affixed to a package in another country, may contain inscriptions required by that country of origin, Section 172.407 (a) states.

*Copies of Hazardous Materials Definitions and Radioactive Material Definitions are available from any DOT office or in quantity from the Department of Transportation, Research and Special Programs Administration, Materials Transportation Bureau, Information Services Division (DMT-43), Washington DC 20590.

Placarding

RCRA/ DOT have established a well-structured form of identification by placarding of hazardous waste materials while it is being transported either by truck, rail, air, or water. As with the labeling system, it involves the use of diamond-shaped signs.

Regulations covering placards for motor vehicles and rail cars are numerous and highly detailed. Such regulations for displaying placards are to be found in Subpart F, Section 172.500, and include:

- Affixing to motor vehicles—172.506.
- Affixing to rail cars—172.508.
- Background requirements—172.527.
- Color specifications—172-Appendix A.
- Dimensional specifications—172-Appendix B.
- Display—172.516.
- General requirements—172.504.
- General specifications—172.519.
- Holder specifications—172-Appendix C.
- Motor vehicles—172.504, 172.506, 177.823.
- Not required—172.504 (c).
- Prohibited—172.502.
- Rail cars—172.504, 172.508, 174.59.
- Removal after unloading—174.69.
- Visibility—172.516.

The following are general rules to be observed in affixing approved placards to motor vehicles and rail cars:

- Affix securely;
- Place clear of ladders, pipes, tarps, etc.;
- Locate so that water and dirt are not sprayed up from wheels, as much as possible;
- Display placard so that the words read horizontally;

- Maintain placards so that visibility, color, and legibility are not substantially reduced.

The following regulations pertain to trucks:

- Affix placards on both sides, rear, and front. The front placard may be placed on the trailer, truck tractor, or both. All placards must be visible from the direction they are facing.
- Placards must be at least three inches from other markings, advertising, lettering, or graphic displays, EXCEPT, when required, two different placards MUST be next to each other.
- On vehicles in combination, DOT recognizes that the view of placards may be obscured "in the direction they are facing" by another vehicle in the combination. However, placards still must be affixed to all four sides of each vehicle.

On rail cars, placards also must be affixed to both sides and both ends. It is recognized by DOT that placards may be obscured in the direction they face, by the connecting car(s).

Freight containers

For freight containers of 640 cubic feet or more, placards must be affixed on all four sides.

For such containers of less than 640 cubic feet, shipped via air, only one placard is required (exceptions are provided for shipments of certain radio-active material, oxygen, and chlorine). Containers of less than 640 cubic feet shipped via land or water may be either placarded or labeled. If placarded, only one placard is required.

Cargo tanks, portable tanks

The following regulations apply to such types of tanks hauling hazardous materials:

- Cargo tanks containing any quantity of hazardous material must be placarded;
- Portable tanks having a rated capacity of 1,000 gallons or more must be placarded;

- Portable tanks having a rated capacity of less than 1,000 gallons need be placarded on only two opposite sides (Section 172.514(a); in addition, portable tanks having a rated capacity of less than 1,000 gallons may be labeled instead of being placarded (Section 172.506(e) (4));

- Cargo tanks and portable tanks must remain placarded when emptied unless reloaded with a material not subject to 49 CFR 100-199, or sufficiently cleaned and purged to remove any potential hazard (Section 172.514 (b)).

For combustible liquids, a FLAMMABLE placard may be used on cargo tanks or portable tanks when transported by highway or water.

Dispatchers, Order Takers

Among the duties pertaining to hazardous materials these personnel must be familiar with are:

- Maintain a current list of regular hazardous material shippers, including classes, quantities, and special problems that may exist;
- As phone pick-up orders are received, check with shipper to determine what, if any, hazardous materials are included in shipment;
- Make certain that when pick-up orders are given to driver (written or verbal), that hazardous materials information is included and understood;
- Make certain that non-compatible materials are not scheduled for pick-up on the same vehicle, and that such materials are not subsequently loaded together;
- Make certain that drivers call for specific instructions when suspect shipments are encountered;
- Make certain that drivers have adequate placards and means of securing hazardous material shipments in vehicles;
- Maintain a current list of

sources of help and information to be used when contaminations and other emergencies occur, and when unrecognizable chemicals are encountered;

- Have specific procedures prepared (preferably written) for use when hazardous incidents occur. For example, what to do when a drum of Class B poison is discovered leaking in a truck out on pick-up.

Vehicle Operators

Duties of these personnel include, but are not limited to:

- Must be able to recognize discrepancies in documents, packaging, labeling, and compatibility;

- Must inspect all hazardous material shipments prior to loading, and contact carrier management for instructions concerning any suspect shipments offered;

- Must refuse to accept hazardous material freight from shippers or interline carriers if the shipping documents are improperly prepared or do not check out with the freight involved, or if the containers are leaking, damaged, or otherwise improper. Shippers must certify that the articles are packaged, etc., in compliance with DOT regulations;

- Make certain that Class A or Class B poisons are not loaded with foodstuffs or other contaminatable cargo;

- Make sure that all hazardous material is properly blocked and secured, and that the proper placard(s) are used when required. Make sure hazardous material containers will not be damaged by other freight, by nails, or rough truck floor and sides;

- Must have in his possession and available for immediate use, proper shipping papers covering all hazardous materials loaded in the vehicle;

- Drivers must understand their responsibilities as to attendance requirements when transporting a hazardous material;

- Must understand the proper

procedures (preferably written) for handling, disposal, and/or decontamination in case of accident or incidents involving hazardous materials;

- Must know what to do and what information to pass on to firemen, police, and others should an emergency arise;

- Must report full details concerning any hazardous material incident, including detailed information as to cause, containers, damage, specific container identification, and corrective action taken.

Dock Foreman, Freight Handlers

Duties of these personnel include:

- Must check hazardous material freight against shipping documents. If they do not check out, make certain that the discrepancies are resolved before freight is allowed to move any further;

- Must refuse to accept hazardous material freight from shippers or interline carriers if the shipping documents are improperly prepared or do not check out with the freight involved, or if the containers are leaking, damaged, or otherwise improper;

- Inspect all hazardous materials freight for leakage or damage, each time it is handled;

- When damaged containers are discovered, isolate and make certain they are not moved until they are in proper condition for further transportation. Make certain that all container information is obtained for use in preparing the required report to DOT. In some instances, an immediate telephone notification to DOT is also required.

- Make certain that non-compatible hazardous materials are not loaded into the same vehicle;

- Make certain that Class A or Class B poisons are not loaded with foodstuffs or other contaminatable cargo;

- Make certain that hazardous material containers will not be damaged by other freight, by

nails, rough sides, or flooring within the vehicle;

- Make certain that all hazardous material is properly blocked and braced before closing out vehicle;

- Make certain that proper placards are placed on vehicles when required, and that placards are removed or covered when not required;

- When contamination occurs or when it is necessary to dispose of hazardous materials or containers, make certain that a qualified individual supervises such activities.

Summary

EPA's regulatory scheme for hazardous waste disposal is the most complex regulatory scheme ever proposed by EPA. Specific requirements pertain to shipping personnel, dispatchers, order takers, claims and overages, shortages, and damages personnel, traffic and freight billing personnel, dock personnel and freight handlers, and vehicle operators. Title 49 CFR Section 173.1 (b) mandates that "it is the duty of each person who offers hazardous materials for transportation to instruct each of his officers, agents, and employees having any responsibility for preparing hazardous materials for shipment, as to the applicable regulations in this subchapter."

The specific requirements applicable to your organization must be studied carefully in light of the particular wastes generated or transported by it.

Information presented in this series of articles is intended only to make you generally aware of the potential problems involved in RCRA's "cradle-to-grave" hazardous wastes disposal program. The burden is upon the generator and the transporter to assure that their organizations are, indeed, complying with RCRA. □

ACKNOWLEDGMENT

Grateful acknowledgment is made to Timothy N. Rurbrink, Hazardous Materials Specialist, Consolidated Freightways, Menlo Park, CA, for his assistance with this article.

Clean-Up of Chemical Spills in Labs

By Donald D. Hedberg, President,
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Figure 1 illustrates the chemical neutralization of a sulfuric acid spill, using sodium bicarbonate.

IN TODAY'S SOCIETY, there is an increasing awareness of the adverse effects of many chemicals on human health and the environment. Laboratory technicians work, on a daily basis, with a large number of useful compounds that are, however, inherently reactive or potentially toxic.

A problem in many laboratories and other plant areas, from a safety standpoint, is how to deal with the most common chemical accident—spills of hazardous compounds. That is, how to effect immediate and rapid cleanup of spills, and how to dispose of the spill material with maximum regard to personnel safety and environmental considerations in conformance with the Resource Conservation and Recovery Act (RCRA).

In addition, the technician must be prepared to deal with spills of a wide range of compounds with dissimilar chemical properties.

*This is the third in a series of three articles about hazardous materials. The January article explained "How to Identify Hazardous Waste." Last month's article covered "Transporting Hazardous Materials."

Two Approaches

There are two major approaches to clean-up of hazardous spills in the laboratory. The first is inactivation (usually by chemical means), in which the compound is decomposed into another compound, which is, it is hoped, less reactive or less toxic.

The second approach is the use of absorbents to pick up chemical spills.

Chemical Inactivation

When one chooses to deal with a chemical spill by means of

chemical inactivation, the method of inactivation chosen must be based on the chemistry of the particular compound in question, and is specific for that compound.

One of the most commonly used methods of chemical inactivation is neutralization. Neutralization is applicable to many commonly used acids and bases, and is based on the reaction: acid plus base equals salt plus H_2O . Many acidic compounds can be neutralized by adding sodium bicarbonate (see Figure 1). For example:

- Organic acids—Such as acetic acid, benzoic acid, citric acid;
- Inorganic acids—Such as

Hazardous Materials Pick-up Data

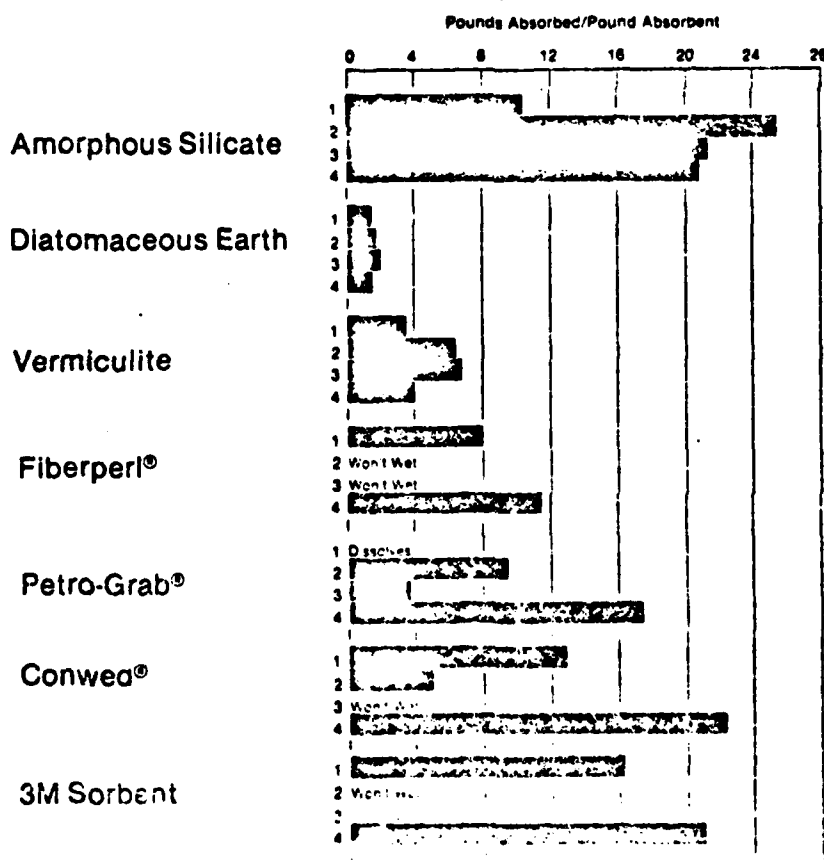




Figure 3 shows the use of a spill control pillow to absorb a concentrated sulfuric acid spill.

hydrochloric, nitric, and sulfuric acids;

- **Substituted organic acids**—Such as bromoacetic acid, chloroacetic acid, trichloroacetic acid;
- **Organic acid halides**—Such as acetyl bromide, acetyl chloride, butylchloride;
- **Inorganic acid salts**—Such as aluminum chloride, aluminum bromide, ammonium chloride.

Similarly, caustics and other basic compounds can be neutralized with weak acids, such as acetic acid or citric acid. Because citric acid is a solid, it is more easily stored and applied to a spill.

Neutralization has several advantages:

- Once the hazardous material is completely neutralized to its corresponding salt, it is essentially non-toxic and non-harmful;
- During clean-up, personnel are exposed only to neutralized, presumably non-harmful material;
- The neutralized materials often can be disposed of directly without adverse environmental effects.

There are, however, some drawbacks to neutralization:

- It is not generally applicable. As a laboratory spill control method, it is limited to the common acids and bases, where the neutralized salts are safe to handle and dispose of;

- Neutralization does not apply to other types of compounds, such as oxidizing or reducing agents, neutral salts, organic solvents, etc.;

- Because neutralization depends on the chemistry of the particular compound involved, it requires exact identification of the nature of the spill, which may not always be possible; for example, where complex mixtures are involved. Choice of the appropriate neutralizer requires an in-depth knowledge of chemistry to avoid creating a hazardous reaction. For example, one would not use hydrochloric acid to neutralize amines or compounds, or sodium carbonate for organic peroxides.

- Chemical neutralization is a strongly exothermic reaction, and it can result in boiling and splattering of the spill material. For large-volume spills, especially, the clean-up process can involve considerable time and effort.

Chemical inactivation also can be used for spills of many oxidizing or reducing agents. Authorities recommend the addition of

a mild reducing agent to spills of the common oxidizers (such as calcium chlorate, calcium hypochlorite, dichromates). Conversely, spills of reducing agents (such as chromous salts, sodium bisulfite, sodium thiosulfate), can be treated with calcium hypochlorite. In addition, several other groups of compounds, mercaptans, and organic sulfides (such as dimethyl sulfide, mercaptoethanol, thiourea), cyanides, and nitriles (such as benzyl cyanide, sodium cyanide, acetonitrile) can be oxidized with calcium hypochlorite in alkaline solution. Some of the inorganic peroxides (such as potassium peroxide) can be reduced with sodium sulfite. The aldehydes (such as acetaldehyde, formaldehyde, furfural) can be reduced by the addition of sodium bisulfite.

Once again, chemical inactivation by oxidation-reduction can be used only for specific classes of compounds. Again, the person using this method must be aware of the chemistry involved. Addition of a strong reducing agent—such as carbon—to spills of oxidizing agents is not recommended, because the mixture could be very reactive.

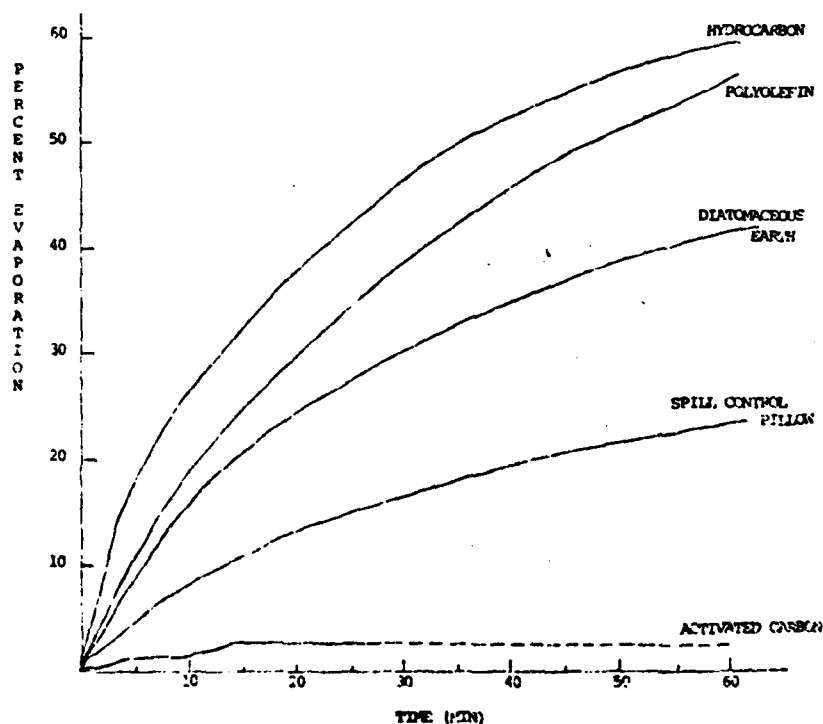


Figure 4 illustrates the rate of evaporation of absorbed hydrocarbon from various absorbents.

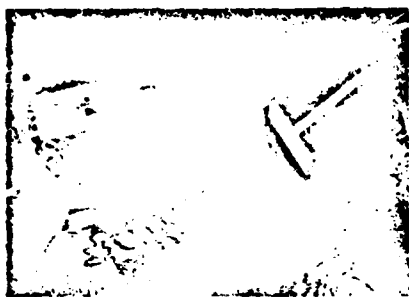


Figure 5 demonstrates the use of a special polypropylene squeegee to prevent the spreading of a spill.

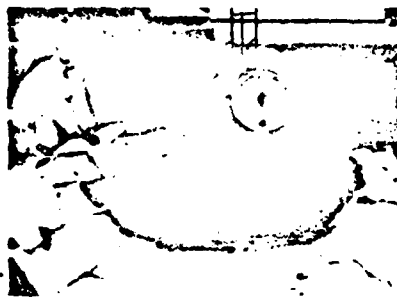


Figure 6 demonstrates how spill control pillows are used to form a dike around a spill to prevent its spreading.

For some potential carcinogens (such as polycyclic aromatic hydrocarbons) there is not an acceptable method of chemical destruction.

Finally, at its best, chemical inactivation—frequently described as “floor chemistry”—consists of procedures that contribute to rather than minimize the hazards in the laboratory. A spill of a toxic or hazardous material should be treated as an emergency, and only procedures that are fast and reliable should be considered. Chemical inactivation is a useful technique for the final disposal of a chemical spill, but only on a non-emergency basis.

Using Absorbents

The second major approach to clean-up of hazardous chemical spills in the laboratory is the use of absorbents.

Absorbents have the advantage of being multi-purpose, i.e., they can be used for different kinds of spills—acid, caustic, solvent. Absorbents are, of course, simply materials that have a high affinity for liquids. The extent of the affinity usually is measured by the volume (or weight) of liquid absorbed per unit weight of absorbent.

To be effective as a laboratory spill control method, an absorbent must possess the following properties:

- **Chemically non-reactive**—Absorbents must be non-reactive with the compounds they are being used to pick up. The more inert an absorbent is, the more useful it will be as a general method of laboratory spill con-

trol. Most of the commonly used absorbents—such as vermiculite, diatomaceous earth, and some silicates—are inert inorganic materials known to be non-reactive with virtually any class of chemical.

- **Multipurpose**—In order to be useful as a general laboratory spill control method, an absorbent should be able to be used to pick up spills of virtually any compound;

- **High efficiency**—The higher the ratio of liquid absorbed per unit weight of absorbent, the more effective the absorbing system will be, and the more economical it will be to use.

Although the commonly used absorbents are more effective than non-absorbent materials in handling large-volume spills, different absorbents do exhibit varying degrees of affinity for different kinds of liquids.

Absorbency rates

Figure 2 shows the results of an experiment in which the absorbencies of seven absorbents were tested, using different solvents. Each sorbent material was immersed in liquid for five minutes, drained for five minutes, then weighed for pick-up.

The liquids used are: 1) Perchloroethylene; 2) phosphoric acid (85 per cent); 3) caustic soda (50 per cent); 4) dactomate-6-herbicide. Four of the absorbents are intended for use primarily with petroleum products (and are efficient for absorbing petroleum products), but are not applicable for spills of different compounds,

such as certain acids, bases, chlorinated hydrocarbons.

The remaining three absorbents—diatomaceous earth, vermiculite, amorphous silicate—are generally inert inorganic materials. Among these three inorganic absorbents, however, there is a wide range of absorptive capacities. Based on this data, diatomaceous earth absorbs roughly one to two times its own weight. Vermiculite will absorb about three to seven times its own weight. And the amorphous silicate is the most efficient of the three, absorbing 11 to 25 times its own weight.

Absorbent pads

Currently being marketed are pads composed of a spun-bonded polypropylene treated with a surfactant so that it will be absorbent to both organic and inorganic chemicals. The advantage of such pads is that they can be used to cover the spill areas quickly. However, the disadvantage of such pads is their wide range of absorptive capacity to chemical spills, and the fact that the pads do not decrease the surface area of the spill and the resulting concentration of vapors over the spill area. This is especially important when cleaning up spills of flammable liquids or liquids with toxic vapors.

In contrast with systems dis-

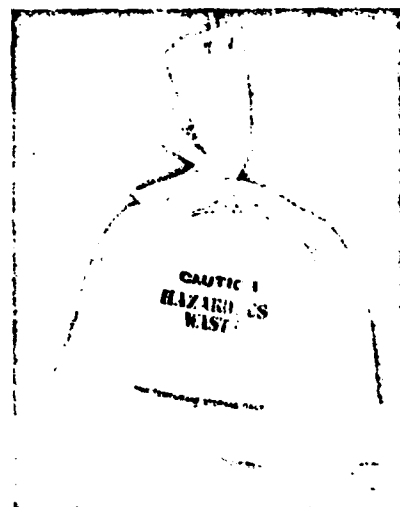


Figure 7 demonstrates how the spill-saturated pillows are placed in a special bag for final disposal.

cussed—which are intended to deal with specific groups of compounds—absorbents offer the capacity to deal with a wide range of compounds. Some absorbents are used to convert a hazardous liquid into a semi-solid for disposal in landfill sites. In the dispensing of small spills, however, it is preferable to elute, evaporate, incinerate, or chemically inactivate the spill from the absorbents. Once the spilled material has been extracted from the absorbent, most absorbents can be discarded or incinerated without causing further pollution problems.

The absorbents do vary among themselves in efficiency, and one criticism that might be levelled against them is that their use entails a messy clean-up process that effectively extends the hazard. This is especially true for low-efficiency absorbents that must be applied in large quantities to absorb the spill effectively, such as diatomaceous earth and vermiculite. Their initial low cost is a small factor when clean-up and disposal is considered. A low-efficient absorbent can multiply the amount of waste requiring disposal by many times.

Amorphous silicate is an absorbent that is both universal and highly efficient. To avoid messy and time-consuming clean-up of

loose absorbents, one manufacturer solved the problem by packaging the amorphous silicate in a bag, called a spill control pillow (see Figure 3). The bag is a chemically resistant, non-reactive polyolefin. It is porous enough to allow liquid to flow through it and be absorbed by the silicate inside. Hence, the unit—consisting of bag and the silicate absorbent—has the inertness of sand to virtually all chemicals (with the single exception of HF acid), and it can be used universally to pick up spills of any acid, caustic, or solvent, plus chemicals that would destroy most other absorbents. The bags, or spill control pillows, are made in three sizes, designed to deal with different size spills. Bags containing 30 grams, 120 grams, and 480 grams absorbent pick up, respectively, 250 ml, one liter, and four liters of liquid.

Studies conducted on spill control pillows show that they will absorb their capacity of most any liquid within 30 seconds, and in the process significantly reduce the surface area of the spill and its rate of evaporation.

In evaluating an absorbent for spill control, it is important to consider how the absorbent will affect the spill.

The accompanying table shows the amount of evaporation that takes place in a light hydrocarbon spill during the initial mixing or application of the absorbent. Both the spun-bonded polyolefin pad and the spill control pillow absorbed their capacity in less than 30 seconds, and the evaporation during the initial contact is low. Diatomaceous earth accounted for an initial 12 per cent loss through evaporation, because it took considerable time for the hydrocarbon to wet the absorbent thoroughly. Activated carbon is associated with an initial 20 per cent loss through evaporation. This can be explained by the high heat of adsorption of activated carbon. For this reason, *the use of activated carbon to absorb spills of low flash point or spills that can release a toxic gas is not recommended.*

Figure 4 shows the amount of evaporation that takes place after the initial absorption. The spun-bonded polyolefin pad and dia-

Per cent of Evaporation Taking Place in a Light Hydrocarbon Spill During Initial Mixing of Absorbent

Absorbent	Per Cent
Spill control pillow	4
Polyolefin pad	6
Diatomaceous earth	12
Activated carbon	20

tomaceous earth have only a slight effect in the suppression of evaporation. The effectiveness of the spill control pillow is because of its rapid absorption, as well as the fact that the spill is contained within the pillow, thereby greatly reducing the surface area of the spill. Figure 4 also shows the effectiveness of activated carbon in suppressing evaporation, once the initial absorption has occurred.

Spill control pillows are placed in locations where spills can be



Figure 8 illustrates a type of respirator with Type H Ultra Filter Cartridges, designed for respiratory protection against radionuclides. It is approved for use in contaminant concentrations up to 10 times the TWA or 10 times the concentration limit for the radionuclide involved.



Figure 9 shows leaded neoprene gloves offering protection when working with radio-active materials. The lead-loaded neoprene gloves are effective when handling materials emitting low-energy gamma rays, and may reduce dosages up to 85 per cent. They are cleaned with disinfectant and radio-active decontamination solutions.

quickly covered with the pillows, or such pillows can be used to mop up or wipe up the spill. A spill squeegee, specially constructed of polypropylene, can be used to contain the area of the spill (see Figure 5).

Special attention should be given to restricting the size of the spill. In a large spill, such as in a plant yard, a dike can be built with spill control pillows (see Figure 6).

Disposal of bags

After use, the pillows are disposed of directly in accordance with local and RCRA regulations—either by incineration or burial in approved containers (see Figure 7). Their transportation to the approved disposal or



Figure 10 demonstrates a special kit prepared for personal protection during clean-up of radioactive spills. An absorbent equipment is contained in the kit for protection against various particulates, dusts, fumes, and mists, including radionuclides.

treatment facility site also must follow pertinent RCRA and Department of Transportation regulations.

Or, the absorbed material can be eluted from the pillows. If desired, they can be chemically treated before disposal. Because the absorbent is chemically similar to sand, once the hazardous materials absorbed within the bag are either removed or rendered harmless, the pillow can be regarded as a non-polluting waste.

Biological and Radio-Active Materials

Such contained absorbents also are used to "soak up" spills of hazardous biologicals and radio-active solutions. To avoid aerosoling of biohazard materials, the spill is covered with spill control pillows, allowing the absorptive action of the absorbent to pick up the spill. Afterwards, the spill-saturated pillows are placed in a biohazard bag, then autoclaved to destroy all micro-organisms.

Radio-active spills are picked up in the same manner. In all spill clean-ups, personnel must wear proper protective clothing (see Figures 8, 9, 10, 11.) Disposal must be in accordance with pertinent RCRA and local laws.

System's Advantages

The use of this system offers several advantages over the other systems discussed:

- It is a universal system. Because it uses only chemically inert or resistant materials, it can be used to pick up spills of most any liquid. It cannot be used to pick up spills of hydrofluoric acid.
- It can be used by technical and non-technical personnel alike, without worrying about the chemistry of a particular reaction.
- It is designed to meet needs for both small- and large-volume spills.
- It is rapid, with each pillow



Figure 11 shows a supplied air respirator system offering protection in atmospheres where ambient air is contaminated by dust, fumes, and various materials immediately dangerous to life or health. The double bib on the hood provides a unique barrier, with the inner bib worn inside the coverall or jacket, and the outer bib on the outside of the garment. The vinyl hood can be readily decontaminated and reused. It meets MSHA-NIOSH approval. (Photo: Courtesy of Standard Safety Equipment Co.)

absorbing roughly 10 to 20 times its own weight in liquid, thus decreasing hazards associated with delay and large quantities of loose absorbent.

- It contains spilled material within the bag for easy disposal and restricts the release of toxic and flammable vapors.
- The system is less expensive than neutralization and other absorbents.
- The absorbent itself is non-combustible and a non-pollutant. □



Donald D. Hedberg holds a B. Sc. degree in chemistry from Carthage College, and is a member of the American Chemical Society, Division of Chemical Health and Safety. He has had considerable experience working in laboratories, making him aware of the safety problems associated with the handling of toxic and hazardous chemicals.

"Better Things for Better Living Through Chemistry" was a familiar slogan a generation ago. Today's generation recognizes that some chemicals have side effects that interfere with better living. Two important laws are directed to preventing and controlling these side effects. These two laws are the Toxic Substances Control Act (PL94-469) and the Resource Conservation and Recovery Act of 1976 (PL94-580). These laws regulate the entire life cycle of a chemical: manufacture, distribution, use, and disposal. This paper presents examples of the events which led to this legislation, describes the legislation and current important issues, lists sources of information, and presents suggestions from the author's experience on how to comply.

Laws and regulations

Controlling toxic substances and hazardous materials

by George B. Stanton

Today we do have better things and do live better through chemistry and the products of the chemical industry. Synthetic fibers replace human tissue and create our easy-care wardrobes. Plastics are part of every phase of our lives—in transportation, communication, and industrial and consumer goods. Chemicals clean food-processing plants and hospitals, destroying or deterring harmful organisms and disease vectors. Chemicals increase the productivity of our farms and forests. The chemical industry makes a significant contribution to the national economy, with sales representing more than six percent of our Gross National Product. Millions of workers are employed by the chemical industry or chemical-dependent industries. Chemical sales now exceed \$100 billion per year, with over 30,000 chemical substances in commerce. To these, a thousand new ones may be added each year.

Even though we do live better through chemistry today, chemicals and the industries that make and use them are under attack because some chemicals have negative long-range

effects along with their immediate benefits. Here are some examples:

DDT—The louse killer of World War II was found to persist in the environment and to kill birds and fish—our first ecological crisis substance.

Kepone—An ant and roach pesticide causes nerve disorders and, perhaps, cancer in man. Fishing has been banned on the James River and parts of Delaware Bay because of kepone pollution.

Vinyl Chloride—This gas is the raw material for polyvinyl chloride (PVC), one of the most widely used plastics. Exposure to vinyl chloride now is stringently restricted by OSHA and EPA because of related liver cancers.

PCB's—Polychlorinated biphenyls were used as heat-transfer fluids in high-temperature processes, in some plastics, and as fire-resistant electrical insulation fluids in transformers, capacitors, and fluorescent light fixture ballasts. The PCB pollution in the Hudson River came from a plant making capacitors.

DBCP—Dibromodichloropropane, one of the latest chemicals in the news, is a pesticide which kills tiny

worms that infest vegetable fields. The same chemical now is believed to cause sterility in workers who process it.

These chemicals are called refractory. High temperatures e.g. 1,000°C (1,800°F) and long residence times (several seconds) are needed to decompose them in an incinerator. These same chemicals do not decompose in the environment, as do many other natural and synthetic organic chemicals. Instead, these refractory chemicals persist in the environment. The same molecules of pesticide that kill the insect or other pest then pass into the body of the predator who eats that insect or drinks the water in which the dead pest decays. The molecules of pesticide then accumulate in the predator and weaken or kill it, or pass on to its offspring, or pass to where they weaken or kill successive generations of aquatic life, after reaching a water course in the environment. These molecules of pesticide can be compared to lead pellets from the hunter's shotgun, that missed the water fowl rising from a pond. The lead pellets fall to the bottom of the

pond and, in time, are swallowed by ducks, geese, or other bottom-feeders. The ingested lead then weakens or kills the feeder and its offspring.

Until the environmental movement took hold, we did not pay attention to the long-range consequences just described because we were not aware of these consequences. For many chemicals, we did not have the ability to detect and quantify micrograms (1×10^{-6} grams) or nanograms (1×10^{-9} grams)—and so measure concentrations of parts per million or parts per billion in the organs and body fluids of small animals or plants. Now that this analytical ability exists, scientists seek to relate the presence of a chemical to changes in organs, even in individual cells. These relationships, whether proven or speculative, have supported the environmental movement's shifting from requiring "clean air" and "pure water" to setting standards for the concentration of specific chemicals in the air we breathe, in the water we drink, and in the food we eat. The regulations on the use of fungicides, insecticides, and rodenticides (FIFRA) set by EPA and on food residues set by FDA are earlier examples of this shift. The Toxic Substances Control Act and the Resource Conservation and Recovery Act are the current results of this shift.

Toxic Substances Control Act

The Toxic Substances Control Act, (PL94-469), also known as TSCA or as TOSCA, was signed into law in October 1976, after many years of controversy in the Co. ~~re~~. Portions of this law were published in *Professional Safety*, December 1976. The purpose of this law is to anticipate and address chemical risks before it is too late to undo damage to human health and the environment. This law authorizes the Administrator of the U.S. EPA to require testing of chemicals (at the manufacturers expense), set pre-market notification of new chemicals, restrict (regulate) manufacture, use, etc., of chemicals, require record-keeping and reporting, require quality control procedures, and impose penalties. Inspections will be made. Disclosure of data is restricted; however, health and safety information is subject to disclosure. Any citizen may bring a civil suit under this law. The law applies to

TOSCA . . . anticipating and addressing chemical risks . . .

imports and exports, too. Chemicals used exclusively in pesticides, food, food additives, drugs, and cosmetics are exempted from the Act because all of the exclusions are regulated under other Federal laws. Chemicals used in cosmetics, exempt from TOSCA, will be reviewed by the Cosmetic Ingredient Review, an industry-supported program that expects to review between 10 and 50 ingredients, of the 2800 listed in the Cosmetics Ingredient Dictionary, each year. Priorities for review are based on frequency of use, use by children or the elderly, high concentrations, possible biological activity, and consumer complaints.

Initial chemical substances inventory

EPA's actions under TSCA have concentrated on the Initial Chemical Substance Inventory. This Inventory of existing chemicals is required under the law. A revised Inventory is to be published in 1980. The Inventory contains about 44,000 chemical substances in four volumes. Volume I contains the Initial Inventory arranged by Chemical Abstracts Service (CAS) Registry Number. Volumes II and III contain the Substance Name Section, an alphabetical listing of systematic chemical names and synonyms for substances on the Candidate List. Volume IV has two parts. The Formula Section orders substances with known chemical constitution by molecular formula. The Chemical Substances of Unknown or Variable Composition, Complex Reaction Products, and Biological Materials (UVCB) Section presents chemical substances that do not have specific molecular formula representations. Finally, there is a volume with

and a volume with Reporting Companies. Supplement I was issued in October, 1979.

Manufacturers of chemical mixtures (e.g. paints) and research chemicals are exempt from these requirements unless the Administrator determines such reporting is necessary to enforce the Act. The same exemption applies to small manufacturers, except for chemicals that are subject to regulatory provisions of the Act.

Deciding who is a small manufacturer was a key element in EPA's proposed rules. Most safety and industrial hygiene professionals would agree that safety, health, and environmental problems occur more frequently among smaller manufacturers and the smaller plants in multi-plant corporations than in larger plants. In its first proposal, EPA would exempt companies that either manufacture at a single site and have annual sales of less than \$100,000, or produce less than 2,000 lbs. a year of product. One industry group proposed another definition: annual sales of less than \$30 million, less than 300 employees, or less than \$415 million in assets. Adopting EPA's first proposed definition would have placed a great burden on companies short of scientific and managerial staff. On the other hand, adopting the industry definition would eliminate an unknown, large percent of the chemical industries' manufacturing capacity, and so, eliminate their chemicals from this regulation.

Small manufacturer, as defined in Section 710.2(x) of EPA's regulations on the Initial Chemical Substance Inventory, means a manufacturer whose total annual sales are less than \$5 million based upon the manufacturer's latest complete fiscal year as of January 1, 1978. However, no manufacturer is a "small manufacturer" with respect to any chemical substance which such person manufactured in 1977 at one site in amounts equal to or greater than 100,000 pounds (45,400 kilograms).

Calculations for the \$5 million criterion should be based upon the total sales of all products, whether or not they are chemical substances. In the case of a company which is owned or controlled by another company, the \$5 million criterion applies to the total

annual sales of the owned or controlled company, the parent company, and all companies owned or controlled by the parent company taken together. (Federal Register, Dec. 23, 1977, pp. 64583,4)

New chemicals—new uses

Manufacturers of new chemical substances must notify EPA at least 90 days before the manufacture of the chemicals for commercial purposes. Any chemical which is not listed on the initial inventory of existing chemicals will be considered "new." Premarket notification may also be required for significant new uses of existing chemicals. Premarket notification is now in effect. Limited exemptions are provided. The Act authorizes the EPA to prohibit or limit the manufacturing, processing, distribution, use, or disposal of a chemical pending acquisition of additional data. Similar requirements apply to drugs under FDA and such proceedings consume years before approval is given to market a new drug. The administrator may require fees, not more than \$2,500, to defray the cost of reviewing testing data and premarket notifications.

Pre-market notification of 400 new chemicals each year was anticipated under this section of TOSCA. However, only 37 such notices were received during the last six months of 1979 and 42 in January 1980, for a total of 79.

Testing of chemicals

EPA may require manufacturers or processors of potentially harmful chemicals to conduct tests on the chemicals at their expense, to evaluate a chemical's health or ecological effects according to specified testing standards. The Inter-Agency Testing Committee, appointed from eight Federal agencies, has published lists of chemicals or mixtures for priority consideration for testing requirements. A group of similar chemicals may be one item on the list.

Industry is contesting such grouping of chemicals because each different chemical in a group can have different health or environmental effects from other chemicals in the same group. The health and environmental effects which the tests are to identify and to quantify, go far beyond the classical LD₅₀ (lethal dosage for 50% of the ani-

mals tested in a short-time test). These new tests seek subtle changes in the function of tissue and organs, the development of cancers, and other long-term exposure effects. Rather than doing retrospective epidemiological studies of workers exposed for a working life-time, tests over the life-times of two relatively short-lived species are conducted before exposing humans or the environment. Development of disease in animals is not directly transferable to humans. Thus, designing animal test protocols for a specific chemical and its metabolites, sometimes more toxic than the chemical itself, and then interpreting the results are tasks requiring experienced toxicologists, who are in extremely short supply. Such tests are expensive. For example, the cost of such tests for a pesticide is about \$500,000. Laboratory testing capacity is limited; it will be placed under additional pressure if animal test data on pesticides, performed under earlier legislation, must be re-done because of recent allegations about the quality of that work.

These problems may be alleviated somewhat when EPA establishes their toxicological data system. Tests on single cells or other simple organisms, such as the currently popular Ames test, are another hope for the future.

EPA has proposed test rules and standards for test development for toxicity, chronic effects, and physical and chemical properties. See Figure 1, *Super-agencies regulate chemicals, following pages.*

Regulation (restriction) of chemicals

DUTY TO INFORM

"Any person who manufactures, processes, or distributes in commerce a chemical substance or mixture and who obtains information . . . that such substance presents a substantial risk of injury to health or the environment shall immediately inform the Administrator (of EPA)" (sec. 8 (e)). The Act provides protection from discrimination for employees who participate in carrying out the Act. The duty to inform applies to any person, including safety and industrial hygiene professionals.

EPA may prohibit or limit the manufacture, processing, distribution in commerce, use, or disposal of a chemical or mixture which presents an unreasonable risk to health or the environment. These restrictions may include process changes, quality control, and safety control procedures. EPA may conduct inspections, too. Labeling may be required for a chemical or any article con-

taining the chemical. When regulatory actions are proposed, there must be an opportunity for comments by interested parties, including an oral hearing, and in certain instances, cross-examination. For imminent hazards, EPA may ask a court to require action to protect against the risk.

Industry assistance office

EPA's Office of Toxic Substances has set up an Industry Assistance Office so those directly involved in or concerned about the manufacture, processing, distributing, use or disposal of chemical substances or mixtures, may be kept fully apprised of developments and have ample opportunity to participate in the developments. The Industry Assistance Office will also guide industry representatives to the proper EPA offices or executives. For more information and to be put on EPA's TOSCA mailing list, write:

John B. Ritch, Jr.
Director, Industry Assistance Office
Office of Toxic Substances
(TS-557)
Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460
800-424-9065

Resources Conservation and Recovery Act

Millions of tons of waste are accumulating each year with less and less place for disposal. Landfill is becoming exhausted, pollution regulations restrict dumping on land and at sea, and burning pollutes the air. The most rational solution is to recover waste material through recycling. Part of the Resources Conservation and Recovery Act of 1976, passed almost as an afterthought to TOSCA, is directed to that end. But, hazardous waste management, another important part of the Resources Conservation and Recovery Act of 1976, is being enforced vigorously by EPA. EPA estimates 57 million tons of hazardous wastes are disposed of each year by 750,000 waste generators and that 90% of that waste is disposed of by environmentally unsound methods. Today, this is where the action is in the protection of public health from exposure to chemicals.

Hazardous waste management under RCRA

Hazardous waste management is the systematic control of all aspects

TOSCA Interagency Testing Committee

Section 4(e) of the Toxic Substances Control Act (TSCA) established the TSCA Interagency Testing Committee, to identify and recommend to EPA those chemical substances and mixtures to be tested to determine their hazards to human health and the environment. Factors to be considered by the committee when making recommendations include the availability of test data along with exposure and hazard potential.

This committee consists of representatives from:

Statutory Member Agencies

Council on Environmental Quality	National Institute of Environmental Health Sciences
Department of Commerce	National Institute for Occupational Safety and Health
Environmental Protection Agency	National Cancer Institute
National Science Foundation	Occupational Safety and Health Administration

Liaison Agencies

Department of Defense	Department of Interior
Food and Drug Administration	U.S. Consumer Product Safety Commission

From an initial list of about 3,650 chemical substances and categories, this committee made the following recommendations for testing.

Initial Report January, 1978	Second Report April, 1978
Alkyl Epoxides	Acrylamide
Alkyl Phthalates	Aryl Phosphates
Chlorinated Benzenes, (Mono- and Di-)	Chlorinated Naphthalenes
Chlorinated Paraffins	Dichloromethane
Chloromethane	Halogenated Alkyl Epoxides
Cresols	Polychlorinated Terphenyls
Hexachloro-1,3-butadiene	Pyridine
Nitrobenzene	1,1,1-Trichloroethane
Toluene	
Xylenes	

Figure 1. Super Agencies regulate chemicals

of a solid waste which may contribute to an increase in illnesses or deaths, or which may pose a hazard to health or the environment. A waste is hazardous if it is ignitable, corrosive, reactive, or toxic. Toxicity of a water extract (leachate), rather than the waste, is measured. Wastes already declared hazardous include pesticides and solvents. Processes generating hazardous wastes include

textile dyeing and finishing and battery manufacture. Generators of hazardous wastes must comply with regulations on record keeping, labeling, containers, furnishing information to transporters, a manifest system, and reporting to the EPA or to a designated State agency. (New Jersey has a manifest system and is working with New York, Connecticut, Maryland, Massachusetts, New

Interagency Regulatory Liaison Group (IRLG)

In August 1977, the heads of the Consumer Product Safety Commission; the Environmental Protection Agency; the Food and Drug Administration; and the Occupational Safety and Health Administration formed the Interagency Regulatory Liaison Group (IRLG) to ensure that the agencies work closely together in areas of common interest and responsibility. One of eight groups established to promote better coordination was the Regulatory Development Work Group, which undertook to identify hazardous materials that two or more IRLG agencies planned to regulate; and ask the writers of these regulations to jointly prepare a development plan for regulating hazardous materials. Development plans for regulating 24 hazardous materials were published on December 1, 1978.

The 24 materials are:

Acrylonitrile	Ethylene Dibromide
Arsenic	Ethylene Oxide and its Residues
Asbestos	Lead
Benzene	Mercury and Mercury Compounds
Beryllium	Nitrosamines
Cadmium	Ozone
Chloroform and Chlorinated Solvents— Trichloroethylene (TCE); Perchloroethylene (PCE); Methylchloroform	PBBs PCBs Radiation
Chlorofluorocarbons (CFC)	Sulfur Dioxide
Chromates	Vinyl Chloride (VC); Polyvinyl Chloride (PVC)
Coke Oven Emissions	Disposal to Food Chain Land
Dibromochloropropane	
Diethylstilbestrol	

National Toxicology Program (NTP)

Established by the U.S. Department of Health, Education and Welfare in November, 1978, the NTP combines parts of four HEW agencies that study chemical's human health and environmental hazards. These four agencies are the National Cancer Institute, National Institute for Occupational Safety and Health, National Institute for Toxicological Research, National Institute of Environmental Health Sciences. These agencies committed \$41 million from their Fiscal Year 1979 budgets to NTP. The level estimated for the 1980 fiscal year was \$69 million. The NTP Executive Committee consists of heads of these four agencies and of the four IRLG agencies. Hundreds of chemicals are being tested for possible genetic toxicology, carcinogenesis, chemical disposition, general toxicology, immunologic toxicology, neurobehavioral toxicology, pulmonary toxicology, and reproductive and developmental toxicology.

Hampshire, Rhode Island and Vermont to interchange information.) Regulation of transporters is to be consistent with U.S. Department of Transportation Hazardous Materials Regulations. Regulations on treatment, storage, and disposal facilities will require assurances of financial responsibility and continuity of operation including a trust fund. Such facilities will be prohibited in high

hazard areas e.g. flood plains and earthquake zones and will be required to have an EPA permit to operate. Inspections and taking of samples by the EPA are permitted.

This law provides for no discrimination against an employee who institutes or testifies in a proceeding under this law. Civil suits are permitted, as is the awarding of costs of litigation.

The Clean Water Act and Amendments and regulations set by the EPA, Corps of Engineers and the U.S. Coast Guard severely restrict the concentrations of hazardous chemicals permitted in the waste water discharged to river or stream (receiving body) or to a waste water receiving (sewage treatment) plant.

Current enforcement

The field enforcement staff of EPA has identified thousands of active and abandoned hazardous waste disposal sites and is using the courts to impose fines and to compel safe disposal or containment. Litigation and Court appearances are handled by the U.S. Justice Department's hazardous waste section and by the local United States Attorney. These agencies believe hundreds of sites have the potential for major human health and environmental effects. The 1980 fiscal year budget for solid and hazardous waste management is being increased twelve million to about twenty-two million dollars. The 1981 fiscal year budget request is expected to be even higher. Other EPA programs have given up 235 staff members for transfer to EPA's hazardous waste program, both in Washington and in the regional offices. Enforcement is expected to be by State agencies, after adoption of EPA rules by that State.

In Niagara Falls, EPA sued Hooker Chemical Corp. for \$124 million in connection with leachate migration from the highly-publicized inactive Love Canal and three other disposal sites.* In Edison, N.J., a partial settlement has been reached in the first case filed for violating the Resources Conservation and Recovery Act. Kin-Buc, Inc., agreed to deposit \$500,000 in an escrow fund, to be used to pay for a cover over its 20-acre dump of hazardous waste, and to pay for air and water pollution monitoring. The cover will be a 2½-foot thick composite of plastic, clay, sand and earth to keep rain off the waste chemicals and prevent leaching into two aquifers.

Three Elizabeth, New Jersey, companies and nine individuals have been indicted for picking up 40 million gallons of untreated acid waste in New Jersey and nearby states, and dumping it through a hidden underground pipeline into

The State of New York is suing Hooker and its parent, Occidental Petroleum, for \$635 million.

Toxic inferno strikes on Earth Day

Fire roared through the Chemical Control Corporation from 10:55 p.m. on April 21 through 9:00 a.m. on April 22, 1980, the Tenth Earth Day. The fire incinerated more than 1,000,000 gallons of hazardous waste stored at this Elizabeth, N.J., site across the narrow Arthur Kill from Staten Island. Hundreds of drums exploded.

The heat of the fire and long residence time in the fire resulted in nearly complete combustion of more than half of the 35,000 drums of hazardous waste left after the controversial site was taken over by New Jersey's Department of Environmental Protection and the company's president was convicted of creating and maintaining a public nuisance. Favorable weather conditions and the billions of BTU's released by the fire sent the billowing smoke plume straight up into the night air for thousands of feet, so that the residents in the surrounding area had minimal exposure to the combustion products.

Meanwhile, a bill to create a \$600 million industry-financed "superfund" is moving through the Congress, accelerated by the Chemical Control Corp. fire.

Since the article on Controlling Toxic Substances was written by Mr. Stanton, the events above could impact the issue.

the Arthur Kill, a narrow channel separating New Jersey from Staten Island. One company and its president face fines of up to \$1,557,000 and up to 157 years in jail.

RCRA rules

Record keeping rules for implementing RCRA were published in the *Federal Register* on February 26, 1980, to take effect in October. Additional rules, defining hazardous wastes and regulating their disposal,

are scheduled for adoption in April 1980 (see above).

Record keeping rules require anyone who produces, transports, stores or disposes of hazardous wastes to apply for an EPA identification number. EPA is mailing out 350,000 application forms. The key to enforcement will be imposed on the producers, or generators, of hazardous wastes. They will be required to initiate a four copy manifest listing the specific facility to receive that

waste. The manifest will identify the waste's source, nature, quantity, and the shipper. The manifest is nearly identical to the manifest required by the U.S. Department of Transportation for hazardous waste carriers. The manifest will go with the shipment, each recipient signing and keeping one copy, as the shipment is transferred from the generator, to the carrier, and, finally, to the EPA approved disposal site who would return the fourth copy to producer certifying to receipt of the waste. Follow-up after 35 days is required. In addition, waste producers must file annual reports with EPA.

Charges of improperly disposing of hazardous wastes, against eight companies and three of their officers, are still under litigation. The Justice Department is seeking \$1.6 million in damages and penalties.

Midnight dumpers

Midnight dumpers are the bane of responsible chemical manufacturers and users and the modern hazardous waste disposal industry. Dumping was justified in the past by the dilution of the waste by flowing rivers, large lakes, and the vastness of the ocean. Dumping was cheap, a few cents a gallon; the used drum containing the hazardous waste was worth more than the dumping fee. Disposing of hazardous wastes in a manner that has no, or minimal, effect on health and the environment is expensive. Costs range from \$1.00 to \$10.00 per gallon. The new EPA manifest system is specifically directed against the midnight dumper.

Closing hazardous waste dumps, pressures to remove these wastes, community resistance to badly needed new hazardous waste disposal plants, and the continuing generation of new wastes creates more opportunities for "midnight dumpers." Trailers of hazardous wastes, abandoned overnight, are found on side streets and vacant lots in Newark and Elizabeth, New Jersey, and on unused farm land in Pennsylvania. Criminal charges, both felony and misdemeanor, have been brought by the State of Pennsylvania against eleven individuals for dumping as much as 2,400 gallons per day between August 1978, and July 1979, into an abandoned coal mine that drained into the Susquehanna River. The Susquehanna, a major river in East-

TEN STEPS TO CONTROLLING HAZARDOUS MATERIALS TOXIC SUBSTANCES

1. Read the labels on packages and containers you receive, warehouse, store, or use. One or more probably contains a substance hazardous to your workers, your plant, or the public.
2. Obtain safety data sheets from suppliers for materials and supplies which carry warning labels or bill of lading hazardous materials descriptions, and for chemicals, mixtures, synthetics, etc.
3. Make these warnings and instructions part of Job Safety Analysis and of the work procedures used by your workers.
4. Make a flow sheet showing how each hazardous material moves through your plant, including by-products and wastes. Confine these materials in quality equipment and facilities. Use closed systems for transfer and for processing; plan for waste disposal before wastes are generated. If you can't dispose of waste, the system will overflow, like a plugged sewer.
5. Make hazardous materials conservation part of your energy conservation program. Recover and recycle these materials back into your process. Recover fuel values in a wastes-fired boiler or pre-heater. Keep wastes of different types separate to ease analytical and disposal costs.
6. Find out how the USDOT hazardous materials regulations on packaging, labeling, and placarding apply to you as shipper of products, by-products, and wastes. Train your employees to comply.
7. If you sell, ship, import, or export chemicals, find out how the new Toxic Substances Control Act applies to you as an individual.
8. Prepare a spill prevention, control, and countermeasures (SPCC) plan to keep spills of toxic substances and hazardous materials from becoming pollutants and to preserve their dollar value.
9. Keep current through *Professional Safety*, trade magazines, newsletters, seminars, trade associations, and *Federal Register*.
10. Start today!

Figure 2.

**"Dumping hazardous wastes
on a plant's own property is prohibited
unless . . . approved by EPA . . ."**

ern Pennsylvania, is a source of water, fish, and recreation for perhaps one-quarter of the state. The cost of cleanup may be as high as \$6 million. If convicted on all charges, each of the eleven individuals indicted face penalties of up to twelve years in prison and \$50,000 in fines.

Keeping hazardous wastes separate will reduce in-plant costs of analyzing containers before disposal and the disposal costs. Dumping hazardous wastes on a plant's own property is prohibited unless done in a manner approved by EPA and permits will be required.

For current information, contact the USEPA's Assistant Administrator for Water and Waste Management (currently, Eckardt C. Beck), Washington, D.C. and your State's

environmental protection agency. Books and seminars on hazardous wastes and their management abound. Because the field is changing swiftly, they, and this article, can go out of date as soon as the ink is dry.

Conclusion

Chemicals are an important part of our national economy. They are used, in one form or another, in every plant, office, and home. The Toxic Substances Control and the Resources Conservation and Recovery Act regulate the life cycle of a chemical. Figure 2 "Ten Steps to Controlling Hazardous Materials . . . Toxic Substances" will help safety professionals, engineers and plant managers comply with these new laws. ♣

GETTING ALL THE IN ONE



Physical science technician Tom Baker repackages some non-hazardous material which has been segregated from a shipment of hazardous waste.

IN October 1979 hazardous waste disposal at Norfolk Naval Base reflected the way things were around the country: plenty of problems and questions, but few solutions and answers.

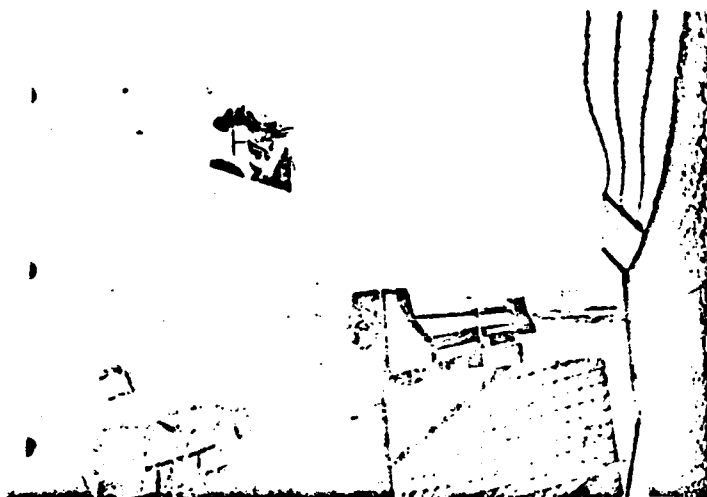
COMFIVE/COMNAVBASE sent out a message describing the local situation as "critical," citing a "lack of hazardous material disposal resources coupled with new highly restrictive and punitive disposal regulations." In December the Commandant 5th Naval District made PWC Norfolk responsible for all hazardous waste disposal (except for biological, ordnance, and nuclear waste). The local public works center was to immediately begin accepting for disposal hazardous wastes and materials from local activities and fleet units.

In January 1980 the Atlantic Division of NAVFAC detailed an environmental engineer to help develop and implement a program for the new hazardous waste disposal division. In April 1980 Sonny White took over as director.

When he arrived, White quickly realized the biggest challenge would be to develop an effective program in a field where almost no guidance and expertise existed. There were no standard operating procedures. For example, White recalls, "Good design criteria for hazardous waste storage facilities was virtually nonexistent at that time. We had to get guidance on ventilation from mechanical engineers and industrial hygienists. We talked to safety and fire protection personnel. We had to funnel all this input together and produce a facility which would satisfy our requirements," he explains. "Added to this, the hazardous waste regulations weren't yet in final published form.

"Developing a good medical surveillance and industrial

NAVY LIFELINE

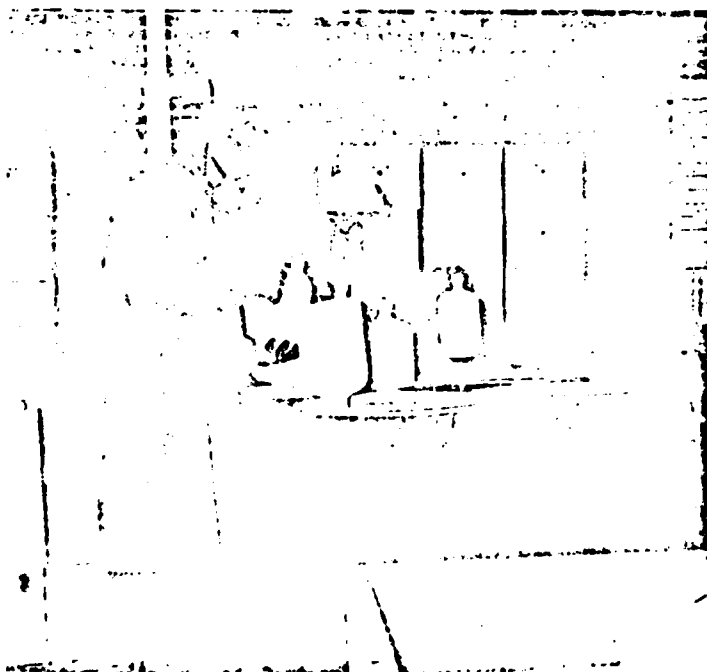


Perched atop a tank truck of AFFE, physical science technician Junior Stephenson uses a sorbent boom to soak up floating oil before starting disposal procedures.

GARBAGE BASKET

By Derek Nelson
NAVY LIFELINE Editor

Photos by PH2 Bill Rogers



Physical science technicians Stephenson and Jimmy Aslew (right) repack containers of morpholine, a boiler feedwater additive.

hygiene program was another interesting problem," White says. "I advised the medical personnel that routine monitoring procedures and medical examinations would be insufficient because of the variety of chemicals our people would be exposed to. We requested more intensive physicals with a stringent biological monitoring program. In normal industrial hygiene practice, you determine the materials present and then select the required respiratory and protective gear you need. In this business, however, we have to collect, transport, and analyze wastes before we know specifically what we're dealing with. It was a classic catch-22 situation — we had to identify the waste before we could provide adequate protection, but we had to have the protection before we could analyze the waste."

To staff the disposal facility, White hired a chemist, a contract inspector, six physical science technicians who work directly with the waste materials, and a clerk. The staff will eventually include four more technicians.

"The technicians had little formal training in hazardous waste," White says. "They receive approximately 30 minutes of training each day, in addition to special instructions and formal classroom sessions. Three of them recently completed a toxic waste disposal class at Old Dominion University."

The division began offering disposal services to generators of hazardous waste last December. In addition to handling current waste generation, the division must deal with hazardous wastes produced previously and stored, awaiting proper disposal.

Between March and June of this year, the division received more than 90,000 gallons of liquid hazardous materials. They also handled 7,000 gallons of hydrazine wastewater and spent

40 hours cleaning up spills.

"We're providing a service that's easy to use but still compliance-oriented," White explains. "For the most part, we're dealing with materials that would probably receive improper disposal if they weren't turned in to PWC. We want to make sure that generators don't stockpile or dump their wastes, so we can't make it too difficult for them to get rid of them. But at the same time, we must comply with the law."

White lists three serious but common problems his staff faces:

Waste in improper containers: Sometimes, hazardous wastes arrive at the disposal facility "in any container which was available," White says. This practice greatly increases the risk of spills. If two incompatible chemicals mix, he points out, they can ignite, explode, or produce toxic gas. Containers must therefore be adequately identified, sealed, and secured. "We've had fairly strong acids arrive here in metal containers," White recalls. "Within several hours, the drums had pinhole leaks and the acid started to spill. When we're fully staffed, we plan to collect and ship all wastes ourselves to ensure proper transportation," White says.

Improperly shipped material: The Department of Transportation published stringent guidelines for transporting hazardous material on public roads. If containers of hazardous material aren't properly secured, accidents will occur. In June a 50-gallon drum of formalin (a formaldehyde solution) fell off a flatbed truck while being transported locally along a public road. At least 10 gallons spilled onto the pavement, and the vapors forced several motorists off the road. A Norfolk policewoman described the effect of the vapors: "Both my eyes were closing shut and watering," she told a local reporter. She also had trouble breathing.

During the same month, in Newport News, VA, a police officer helping clean up a methylene chloride spill at an intersection was overcome by vapors and hospitalized at the intensive care unit of a local hospital.

Mixed wastes: "One immediate task requires educating hazardous waste generators to segregate wastes at the source. Otherwise, a great deal of time and effort must be expended to analyze the waste," White explains. "It's much easier to dispose of ten 5-gallon containers of identified wastes than to analyze then dispose of one 50-gallon barrel of an unknown mixture."

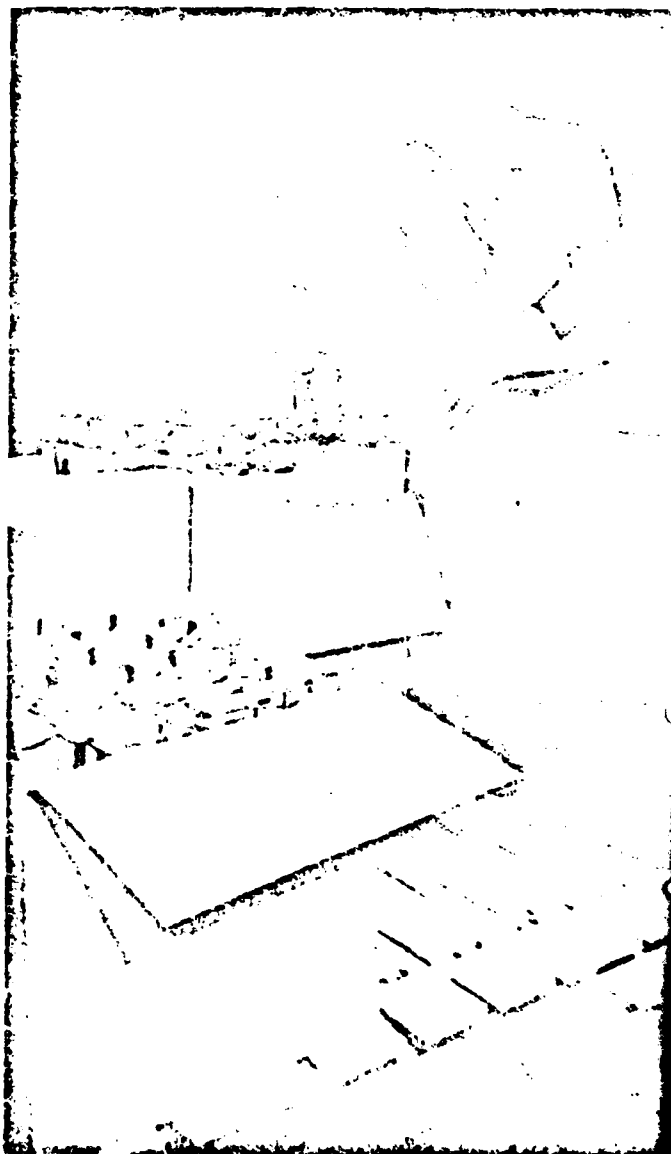
For instance, his staff had to provide disposal guidance for approximately 400,000 gallons of hazardous materials which Navy ships have dumped into SWOB barges. "What we had to

do there was to sample each compartment of the barge, determine the number of layers of waste present, then analyze each layer. Each type of waste may require a different disposal technique," he says.

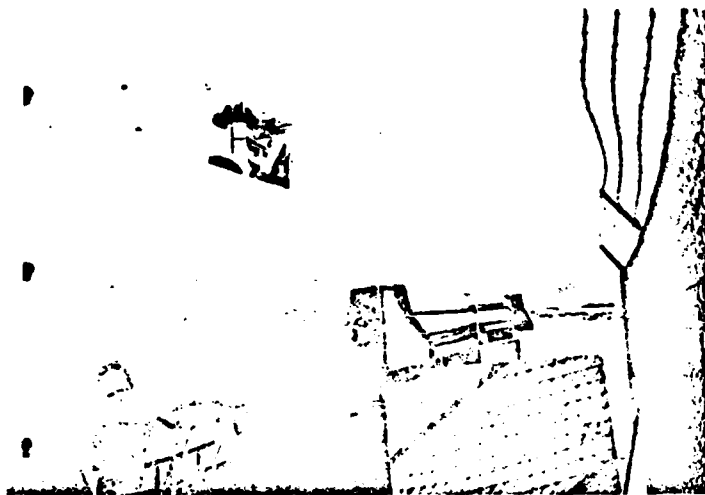
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What happens to a waste material once the division receives and identifies it? There are several options:

- Reusable items (such as some paints and solvents) are recycled or sold.
- Some oily wastes are sent to the fuel oil reclamation plant at Craney Island.
- Some of the acids and bases can be neutralized and



Some hazardous materials can be recycled. Physical science technician Raymond Moody repackages cans of solvent which have been cleaned. They will then be offered for reuse.

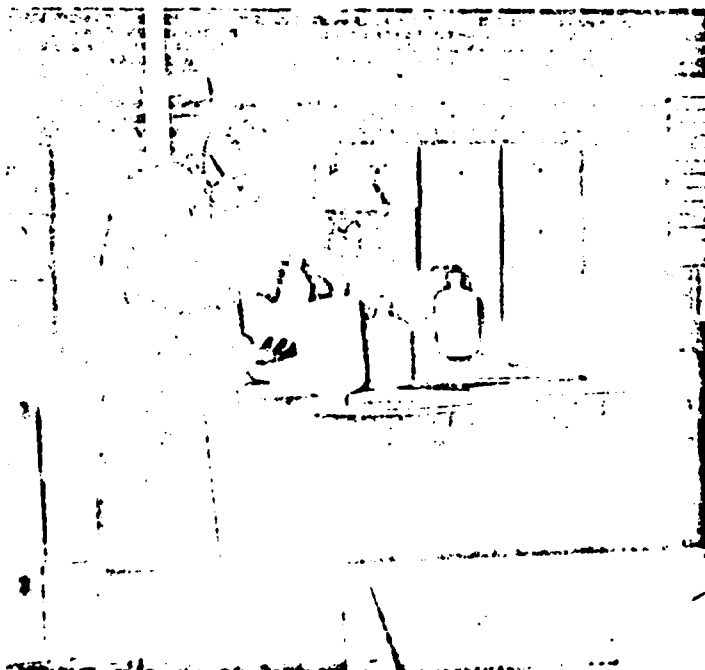


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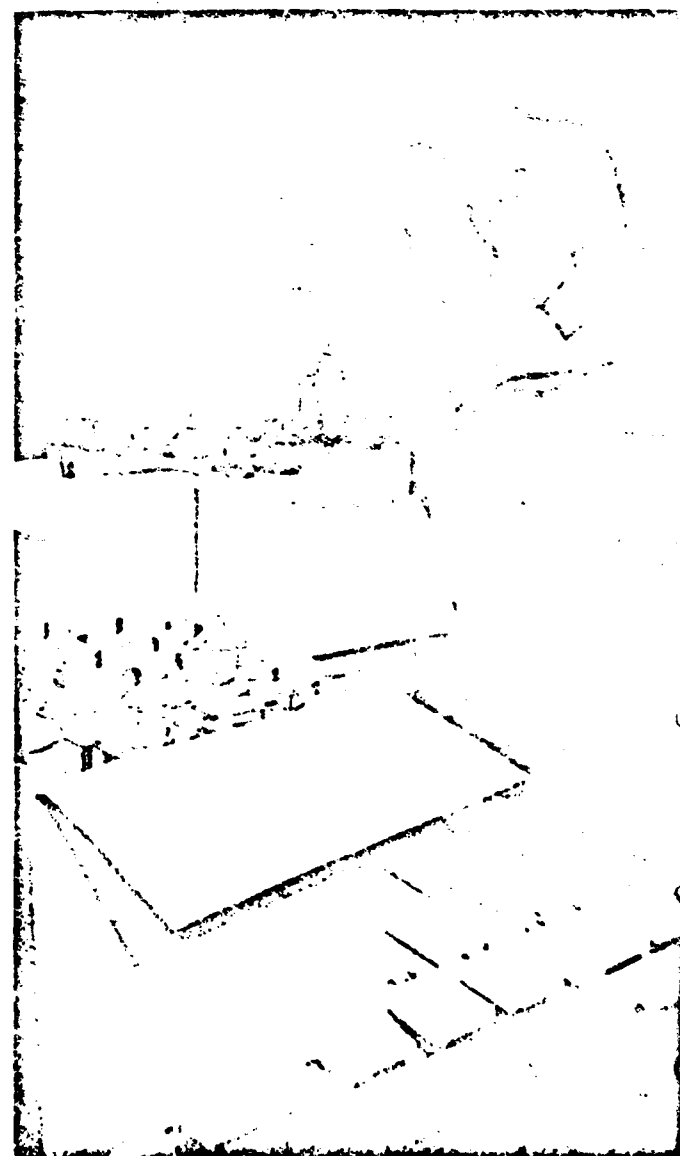
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Stephenson takes a temperature reading (left) while adding calcium hypochlorite (right) to a tank truck of hydrazine wastewater. He reads the temperature to monitor the rate of reaction, which must be carefully controlled to prevent overheating.

discharged into the local sanitary sewer system.

- Some materials can be incinerated at high temperature. "But you have to exercise extreme caution here," White notes. "Only certain wastes are amenable to incineration. Metals, for example, could end up concentrated in the ash or dispersed into the atmosphere."

- Contract disposal. Many types of waste cannot be treated or disposed of in-house. In these cases, waste must be repackaged and disposed of by a licensed contractor. Prior

to shipment, White's staff makes sure that transfer documents, manifests, and containers are correct.

Many times in the past hazardous wastes were mismanaged as a result of carelessness, indifference, or ignorance. Recently issued hazardous waste regulations are designed to prevent future mismanagement. Neither the laws nor the hazardous materials are going to simply go away. A disposal program isn't easy to set up or operate, but — as PWC Norfolk has shown — it can be done. ☐

Hazardous Materials Reference Available

At the NAVSEA safety director's workshop in July, Dr. G. Daniel Howard gave an excellent briefing on hazardous material legislation and problems. American industry produces 40 billion metric tons of hazardous materials per year, he pointed out. "Some of the things our forebears have done are beginning to catch up with us, and we're going to have to pay the price," Howard said.

He saved workshop members a lot of homework by giving them an 83-page notebook which lists federal standards regulating hazardous materials and gives a synopsis of DOD and Navy regulations. The notebook also discusses and reprints several of the major federal regulations (including the Resource Conservation and Recovery Act) and lists hundreds of sources of further information and training data.

A limited number of copies of this reference are available from Dr. Howard (director of the Hazard Control Program) at the NAVSEA Safety School, Poplars Research & Conference Center, 400 E. Seventh St., Bloomington, IN 47405.



Occupational Dermatitis

THE LARGEST ORGAN of the human body is the skin: it comprises about 2,880 square inches (18,060 square centimeters) of surface area. It is also the first body barrier to come into contact with the elements, as well as being subjected to attack from cutting, impact, penetrating objects, radiation, all types of dirt, bacteria, and fungus.

2. Thus, it is not too surprising that the national loss from occupationally-incurred skin diseases exceeds \$100 million annually. One out of every four workers is exposed to some form of skin irritant. One per cent of these workers develop skin disorders from such exposure. Occupational skin diseases account for two thirds of all job-related diseases. Seven out of 10 industrial claims paid by insurance companies are for temporary disability resulting from dermatitis.

3. Occupational dermatitis is a general term used to designate an inflammation of the skin resulting from exposure to irritants in the work environment. (The word eczema often is used as a substitute for dermatitis.) The irritation may vary from slight reddening with mild itching, to a rash or small eruption with intense itching. In severe cases of occupational dermatitis, there may be open or weeping sores, either with or without swelling of the affected area.

4. Not all skins react the same

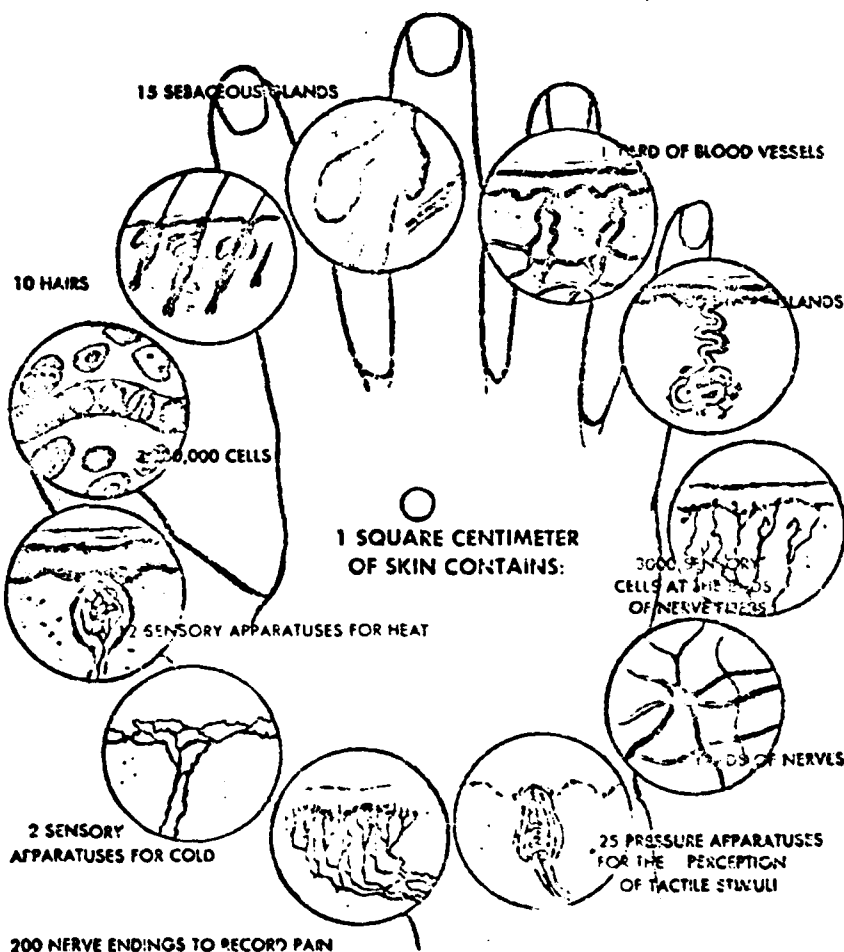


Figure 1 shows the various structures found in one square centimeter of human skin. (Illustration: Courtesy American Medical Association.)

way or in the same degree to chemical, physical and biological insult. The factors involved include: type of skin (pigmentation, dryness, hairiness); age, sex, season; previous skin diseases; allergies; personal hygiene.

Predisposing Factors

5. **Individual susceptibility to skin disorders** varies somewhat because of one or more of the following predisposing factors:

a) **Sex**—Women are more sensitive to many irritants because their skin tends to be less oily than men's. On the other hand women are also more likely to seek early treatment for skin disorders.

b) **Age and Experience**—Young and inexperienced workers suffer more from acute occupational dermatoses than older or more experienced workers.

c) **Temperature Extremes**—Dermatoses are more prevalent in warm weather when the risk of direct contact is greater because less clothing is worn and more skin is exposed. Excessive perspiration also makes the skin more vulnerable to damage. The lower winter temperature may cause the skin to become dry and chapped, thus increasing the incidence of skin irritations.

d) **Excessive oiliness or dryness of skin**—Workers with naturally oily skins are less likely to incur dermatitis when working with fat solvents, but are more susceptible to substances that are readily dissolved in oil and maintained in contact with the skin. Dry skin tends to crack easily, especially with frequent contact with alkalis and solvents. Cracking makes the skin subject to infection.

e) **Lack of cleanliness**—Inadequate standards of personal cleanliness are probably the most frequent predisposing causes of occupational dermatoses.

f) **Allergies**—Some people, for genetic reasons, become highly sensitive or allergic to even minute amounts of some substances.

Causes of Dermatitis

6. **Dermatitis occurs in every kind of workplace.** The direct causes of occupational dermatitis can be classified under the following headings:

chemical; mechanical; physical; plant poisons; biological agents.

Chemical agents

7. **Chemicals** are the most frequent cause of dermatitis in industry. Chemical agents can act as primary skin irritants or cutaneous sensitizers. These differ in two respects: reaction time and mode of action.

8. **Primary irritants** cause skin damage by dissolving or extracting from the skin some of its essential components. Dermatitis will result if the irritant is of sufficiently high concentration or is in contact with the skin long enough. Examples of primary skin irritants are strong acids and alkalis, corrosive salts and solvents.

9. **Sensitizers** will cause an allergic reaction or sensitivity in some people. Sensitization is usually established over a relatively long period of time—a few days to a month—and may develop in areas that were not in contact with the irritant. After the sensitivity has become established, exposure to even a minute amount of the agent is likely to produce a severe reaction. Examples of common sensitizers are certain aniline dyes, nickel, chromium, organic mercury compounds, and plastics such as uncured epoxy resins. Some substances such

as organic solvents, formaldehyde, and chromic acid can produce both primary irritation and sensitization.

10. These primary skin irritants may so sensitize a person that he develops dermatitis from extremely low concentrations of compounds that could previously be handled without difficulty.

11. There are various levels of sensitivity and many people who become sensitized to the materials they are handling can continue to work with them if they take precautions against direct contact. With high levels of sensitization, however, it may be impossible to control the exposure enough to permit the individual to go on working with the material.

12. Some chemicals sensitize the skin to light. Chemicals that act in this manner are called *photosensitizers*, examples of which are coal tar, certain dyes, and crude petroleum. Those affected develop sunburn or hives and blisters more easily than others.

13. **Insoluble oils, greases, tars, waxes, and certain chlorinated hydrocarbons** can cause folliculitis and acne-form dermatitis, both common types of occupational dermatitis. If contact with these substances is prolonged, *skin cancer* could result. Arsenic, coke oven emissions, soots, and tars are known to cause skin cancer while workers involved in the refining

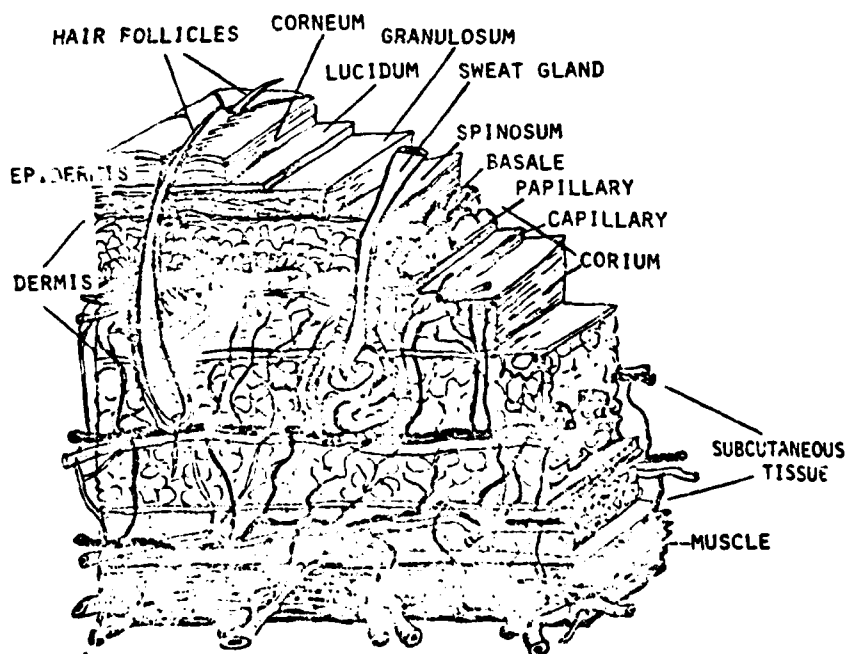


Figure 2 illustrates a magnified section of human skin, delineating the three layers: epidermis, dermis, and subcutaneous. (Illustration: Courtesy American Medical Assn.)

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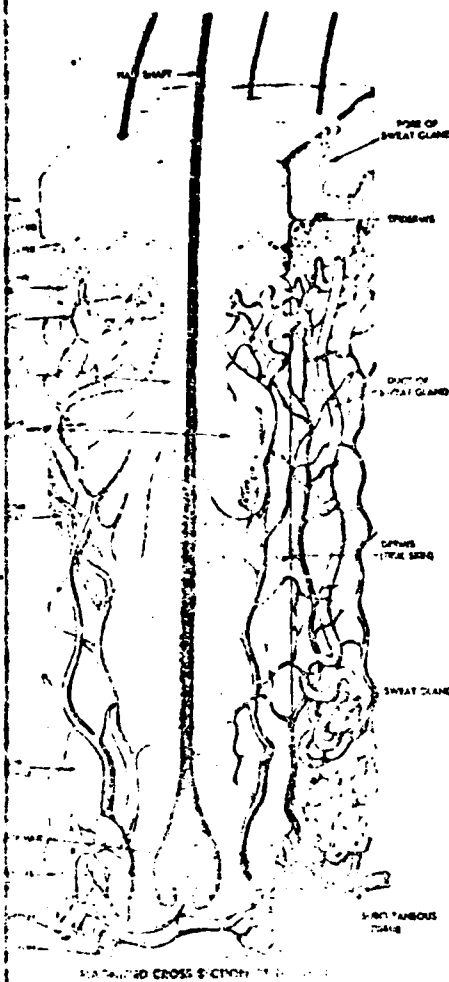


Figure 3 provides another view of the various structures of the skin, which is subject to injury from soap, solvents, alkalies detergents, chemicals, and certain internal diseases. It is the skin, however, that defends against water soluble chemicals, rapid entrance or loss of water, changes in pH, micro-organisms, ultraviolet light, and physical injury.

of shale oil, coal oil, and petroleum are subject to *paraffin cancer*.

Mechanical and physical

14. *Mechanical causes* include friction, pressure and trauma resulting in abrasions, wounds, bruises, and the introduction of foreign bodies into the skin. Skin wounds become readily infected with bacteria, and fungi and can become the site of malignant growths. Friction to skin, which has become softened by high temperatures and excessive perspiration, may damage the outer protective layer of the skin and cause

inflammation and other symptoms of dermatitis. Among the *physical agents* that lead to occupational dermatitis are heat, cold, water, sunlight, x-rays, ionizing radiation, and electricity. Dishwashers and laundry workers are subject to dermatoses caused by excessive immersion of the skin in hot water, which weakens the skin barrier. High temperatures cause perspiration and softening of the outer layer of the skin and can lead to "heat rashes," especially among workers exposed to hot humid weather, electric furnaces, hot metals, and so on.

15. Sunlight is the greatest source of skin damaging radiation affecting construction workers, fishermen, farmers, foresters, and other outside workers. Excessive exposure to sunlight and ionizing radiation, especially for fair-skinned people, can cause skin cancer. The skin is also the means of entry for several other known carcinogens that affect different body organs.

Plant poisons

16. Poisons that can cause dermatitis are produced by several hundred plants, the best known of which are poison ivy, poison oak, and poison sumac. Dermatitis from these three sources may result from contact with any part of the plant, from exposure to smoke off the burning plant, or from contact with objects that have previously been exposed to the poison. Woods like silver fir and spruce have been reported to cause dermatitis especially when being sandpapered and polished.

Biological agents

17. Bacteria, viruses, fungi, and insects can cause or complicate occupational dermatitis. Horticultural workers and farmers may contract fungal diseases from plants, soils, and cattle. Disorders caused by parasites occur among food and grain handlers, farmers, laborers, miners, fruit handlers, and horticulturists.

18. The most common kinds of skin infection in the manufacturing industries are boils or folliculitis caused by bacteria in cutting oils.

19. Skin infections also occur among butchers and persons who have to handle cadavers. Examples are anthrax from the hides of infected animals, tularemia from skins, glanders from horses, and erysipelas from animal products.

Prevention of Dermatitis

20. It is far easier to prevent dermatitis than to cure it. The increasing costs of Workers' Compensation, insurance protection, sickness and accident benefits, and lost production make it good business for employers to take every reasonable step to protect workers from the risk of dermatitis. Effective prevention requires full cooperation between employers, supervisors, physicians, nurses, industrial hygienists, safety engineers, and workers, each having specific responsibilities in a program of prevention and control. Every employee should be informed by management of the hazards of materials used in the plant or work site, and instructed in safe handling, storage, and other preventive measures. In the United States, employers are required by the *Occupational Safety and Health Act* of 1970 to identify hazardous substances and to provide proper cleaning facilities and the approved safety clothing. The basic aim of any preventive program is to eliminate contact between contaminants and the skin. Because causes of industrial skin disease vary considerably from one industry to another, it is advisable to solve each exposure problem individually.

21. Careful consideration should be given to hazards before new processes and chemicals are introduced.



Figure 4 shows a typical contact dermatitis that has been located for convenience as well as for anticipating needs.

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CHEMICAL CAUSES OF SKIN DISEASES

IRITANT OR AGENT	Primary Irritants	Sensitizers	Manifestations of Irritating Action on the Skin (More important damages may result in other organs.)	Typical Occupations, Trades, or Processes Where Exposure May Occur
ACIDS			Dermatitis and ulcers	Manufacturing acetate rayon, printing and dyeing, hat makers
Acetic	X			
Carbolic (phenol)	X		Irritation and erosion of skin, eczema, anesthesia	Carbolic acid makers, disinfectant manufacturing, dye makers, pharmaceutical workers, plastic manufacturing
Chromic	X	X	Ulcers ("chrome holes") on skin, inflammation and perforation of nasal septum	Platers, manufacturing chemicals and dyestuffs
Cresylic	X		Irritation and erosion of skin, anesthesia	Manufacturing disinfectants, coal tar workers, cresylic acid workers
Formic	X		Blisters and ulcerations	Formic acid workers, mordanters, cellulose formate makers, airplane dope makers
Hydrochloric	X		Irritation and ulceration of skin	Bleachers, picklers (metals), refiners (metals), tanners, chemical manufacturing
Hydrofluoric	X		Severe burning of skin, erosion, ulcers, formation of blisters	Enamel manufacturing, etchers, hydrofluoric acid makers, antimony fluoride extractors
Lactic	X		Ulcers (if strong solutions are used)	Dyeing, felt hat industry
Nitric	X		Severe skin burns and ulcers	Nitric acid workers, electroplaters, metal refiners, acid dippers, nitrators, soda makers
Oxalic	X		Local caustic action on skin, bluish discoloration and brittleness of nails	Tannery workers, blueprint paper makers, oxalic acid makers
Picric	X		Red rash (resembling that of scarlet fever), itching skin, a yellow discoloration of skin and hair which is neither a dermatitis nor a dermatosis	Explosives workers, picric acid makers, dyers and dye makers, tannery workers
Sulfuric	X		Corrosive action on skin, severe inflammation of mucous membranes	Nitrators, picklers (metals), acid dippers, chemical manufacturing
ALKALIS	X		Irritation and ulceration	Fertilizer makers, agricultural workers, alkali salt makers
Calcium cyanamide				
Calcium oxide, carbonate, and hypochlorite	X		Dermatitis, burns, or ulcers	Lime workers, manufacturing of calcium carbonate, soaps, fertilizer
Potassium hydroxide	X		Severe burning of skin, deep-seated persistent ulcers, loss of fingernails	Potassium hydroxide makers, electroplaters, paper, soap, and lye makers
Sodium hydroxide	X		Severe burning of skin, deep-seated persistent ulcers, loss of fingernails	Sodium hydroxide makers, bleachers, soap and dye makers, petroleum refiners, mercerizers, tannery workers
Sodium silicate	X		Thickening of skin, ulcers on fingers	Bleachers manufacturing cardboard boxes
Sodium or potassium cyanide	X		Blisters, ulcers	Electroplaters, case hardening, extraction of gold
Trisodium phosphate	X		Blisters, ulcers	Manufacturing scouring powders and cleansers, industrial cleaning
SALTS OR ELEMENTS	X		Irritation and eczematous eruptions of skin	Antimony extractors, glass and rubber mixers, manufacturing of various alloys, fireworks, and aniline colors
Antimony and its compounds				
Arsenic and its compounds	X	X	Darkening of skin, perforation of nasal septum, epithelioma, formation of horny growth or tissue on palm, eczema around mouth and nose (possible loss of nails and hair)	Artificial leather makers, carotiers (felt hats), manufacturing insecticides, glass industry and vermicides, manufacturing artificial flowers, calico printing

CHEMICAL CAUSES OF SKIN DISEASES (Continued)

IRRITANT OR AGENT	Primary Irritants	Sensitizers	Manifestations of Irritating Action on the Skin (More important damages may result in other organs.)	Typical Occupations, Trades, or Processes Where Exposure May Occur
Barium and its compounds	X		Eczema, cyanosis of skin	Barium carbonate, fireworks, dye, and paint makers
Bromine and its compounds	X		Brownish stain and eruptions on skin	Bromine extractors, bromine salts makers, dye and explosive makers, photographic trades
Chromium and its compounds (Only the hexavalent chromium compounds are skin irritants.)	X		Pit-like ulcers ("chrome holes") on skin, perforation of nasal septum, eczematous eruptions	Chromium platers, dye industry workers, chrome manufacturing, leather tanners
Mercury compounds	X	X	Corrosion and irritation of skin, "mercurial eczema"	Explosives manufacturing, silver and gold extractors, manufacturing electrical appliances and scientific equipment, hat making
Nickel salts	X	X	"Nickel eczema," (some authorities question whether nickel is the agent responsible.)	Nickel platers, alloy makers
Sodium and certain of its compounds	X		Burns and ulcerations	Bleaching; soap, paper, glass manufacturing
Zinc chloride	X		Ulcers of skin and nasal septum	Manufacturing chemicals and dyestuffs
SOLVENTS Acetone	X		Dry (defatted) skin	Spray painters, celluloid industry, artificial silk and leather workers, acetylene workers, lacquer and varnish makers, electrical equipment manufacturing
Benzene and its homologues (toluene and xylene)	X		Dry (defatted) skin	Chemical, rubber, and artificial leather manufacturing, dry cleaning
Carbon disulfide	X	X	Dry (defatted) irritated skin	Extraction of oils, fats, and a wide range of other materials, manufacture of rayon, rubber, and a wide range of cements, germicides, and other materials
Chlorinated phenols	X	X	Severe eruptions	Treating wood
Petroleum distillates	X	X	Acne, epithelioma	Petroleum refiners, machinists, furniture polishers
Trichloroethylene	X	X	Dry cracked skin	Degreasers, paint removers
Turpentine	X	X	Red or blistered skin, eczema	Painters, furniture polishers, lacquerers
SOME DYE INTERMEDIATES Chlorinated compounds		X	Blisterlike eruptions	Dye manufacturing
Dinitrochlorobenzene	X	X	Blisterlike skin eruptions	Dye manufacturing
Nitro and nitroso compounds		X	Red skin and eczematous eruptions	Dye manufacturing
Phenyl hydrazine	X	X	Blisterlike skin eruptions	Dye manufacturing and pharmaceuticals
ACNE PRODUCERS Petroleum oils	X		Inflammation of hair follicles, acne, skin ulcers, boils, malignant tumors	Petroleum workers, machinists, mechanics
Pitch and asphalt	X		Eczema, inflammation of hair follicles, acne, formation of horny growth or tissue, tumors, epithelioma	Manufacturing paints and roofing cements, woodworking
Tar and pitch	X	X	Acne, eczema, and malignant tumors	Tar manufacturing, manufacturing roofing paper, felt, and pitch. Road building and repaving
DYES Including chemicals handled in dye manufacturing		X	Red skin, blisterlike eruptions	Dye workers

CHEMICAL CAUSES OF SKIN DISEASES (Continued)

IRRITANT OR AGENT	Primary Irritants	Sensitizers	Manifestations of Irritating Action on the Skin (More important damages may result in other organs.)	Typical Occupations, Trades, or Processes Where Exposure May Occur
PHOTO DEVELOPERS Metal dichromates, anidol, quinine, para aminophenol, etc.		X	Red skin, blisterlike eruptions	Photo developers
RUBBER ACCELERATORS AND ANTIOXIDANTS Hexamethylenetetramine, para phenylenediamine, para nitrosodimethylaniline, and phenyl naphthylamine (B)		X	Itchy skin, dermatitis usually called "rubber itch"	Rubber workers, such as compound mixers and calender and mill operators
SOAPS AND SOAP POWDERS CONTAINING AN EXCESS OF FREE ALKALIES		X	Eczema, blisterlike eruptions, chronic abscesses	Soap manufacturing, dish-washers, scrub-personnel, soda fountain clerks
INSECTICIDES Arsenic	X		Red skin, blisters	Manufacturing and applying insecticides
Chlorophenols (tetra and penta)	X	X	Red skin, blisters	Manufacturing insecticides, treating wood
Creosote	X	X	Pustular eczema, black discoloration of skin, warts, epithelioma	Manufacturing wood preservatives, wooden paving blocks, railroad ties, Lysol, oil pressed bricks
Fluorides	X		Severe burns, dermatitis	Manufacturing insecticides, enamel manufacturing
Phenylmercury compounds	X	X	Red skin, blisters	Manufacturing and applying fungicides and disinfectants
Pyrethrum		X	Red skin, blisters, pimples	Manufacturing and application of insecticides
Rotenone		X	Red skin, blisters	Manufacturing and applying insecticides
OILS Cashew nut oils		X	Severe dermatitis, as blisters	Handlers of unprocessed cashew nuts
Cutting oils - oily emulsions or soluble oil mixtures		X	Oil acne, inflammation of hair follicles	Machinists
RESINS Coal tar products, such as pitch and asphalt	X	X	Acute dermatitis, "shagreen skin," acne, inflammation around hair follicles, epitheliomatous cancer, eczema, ulcers	Manufacturing various coal tar products, road making, gas manufacturing
Synthetic resins such as phenol-formaldehyde, urea-formaldehyde, cumarone, ester gums, glyptal, vinyl, furfural, cellulose nitrate, cellulose acetate	X	X	Intensely red and itchy skin	Plastic workers, varnish makers
(According to one authority, the reactions from this group of materials in some instances are due to the essential composition of the synthetic resin, but in other cases the reactions noted are due to the presence of added compounds such as plasticizers and other modifying agents.)				
Synthetic waxes, such as chloronaphthalenes and chlorodiphenyls		X	Dermatitis and acne	Manufacturing electrical apparatus, paints, varnishes, and lacquers
EXPLOSIVES Chlorates, nitrates, mercury fulminate, tetryl, lead styphnate, TNT, amatol, DNT, dinitrophenol, etc.		X	Red skin, papular eruptions, severe irritation	Explosives manufacturing, shell loading

work shift.

33. The proper use of a barrier cream not only gives protection against irritants but it also induces the worker to wash at least twice during the work shift.

Preplacement medical

34. The preplacement medical and health interview is one of the first steps in the prevention of occupational skin diseases. The responsible physician or nurse should know the type of work for which the applicant is being considered, environmental conditions, and the materials to be handled. If the work involves exposure to skin irritants, the physician or nurse should determine if the prospective employee has characteristics that would predispose him or her to dermatitis. For example, persons with mild to moderate acne are at greater risk of developing dermatitis from certain chlorinated hydrocarbons, tars, pitches, and insoluble cutting fluids. Other previous skin conditions, which the physician or nurse will consider, include eczema, psoriasis, fungal infections, and allergies to foods or drugs. Preplacement medical examinations and periodic check-ups are also opportunities to determine off-the-job activities that may expose the person to dermatological hazards. It is also the ideal time to introduce the need for good hygiene and other preventive practices, which can be related to any susceptibility.

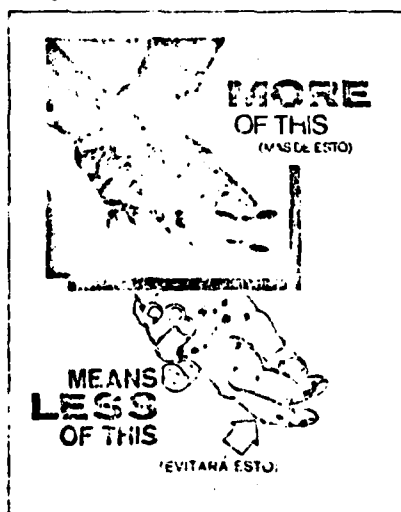


Figure 7 shows a dual-language poster. It provides a reminder for workers to wash contaminants from the skin to prevent dermatitis or infections. (Illustration: Courtesy The Soap and Detergent Association.)

Medical aid

35. Early detection and medical treatment of skin injuries is of major importance in the prevention of dermatitis. Employees should report all skin irritations, however slight, to their supervisors and receive periodic medical examinations. If dermatitis does occur, the nurse or physician should work closely with the employee and management to find the cause of the disorder and help develop preventive measures.

36. When dermatitis suddenly develops on a job or operation on which an employee has previously worked, the affected person may have developed a sensitivity to the substances they are handling. If this is the case the physician may decide that the affected employee should be transferred to another job until the hazard can be eliminated. In any event, early advice and treatment may prevent the irritation from becoming serious and lessen the likelihood of a long spell off work. Prompt medical aid will also reduce the chance of the disease recurring.

Summary

37. Causative factors relating to occupational dermatitis are complex, and individuals' particular skin reactions to specific substances are also complex and highly individual. Active diagnosis of a particular employee's skin problem, and even relating the problem to a particular work process or substance is best left to a physician whose specialty is dermatology.

38. And the causative factors may be overlapping in that they may be both primary irritants and sensitizing agents.

39. An assessment of work processes and materials used when compared with the substances known to be causative agents can suggest areas where engineering or administrative controls can be taken as preventive steps.

40. The many agents that cause sensitizing dermatitis are found commonly and in great variety in industry. They include chemicals, physical agents, biological agents, and mechanical agents.

41. The best defense against any form of occupational dermatitis is to eliminate the irritating agents from the workplace.

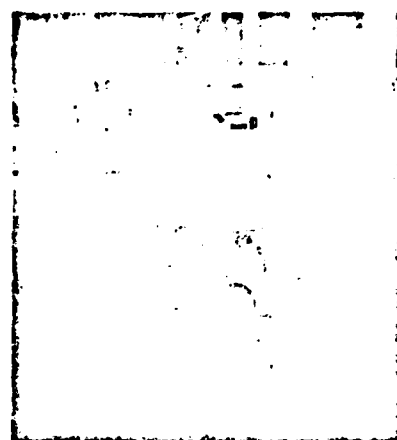


Figure 8 shows that soap is perhaps one of the most useful precautions against industrial dermatitis. OSHA requires that hand soap or similar cleansing agent be provided for employees.

42. Personal sanitation—both of the worker's body and of his personal protective equipment—provides what many health professionals believe is the major means of defense against all forms of occupational dermatitis.

Sources of information

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Input should be obtained from workers, manufacturing and purchasing agents, chemists, hygienists, physicians, nurses, and engineers.

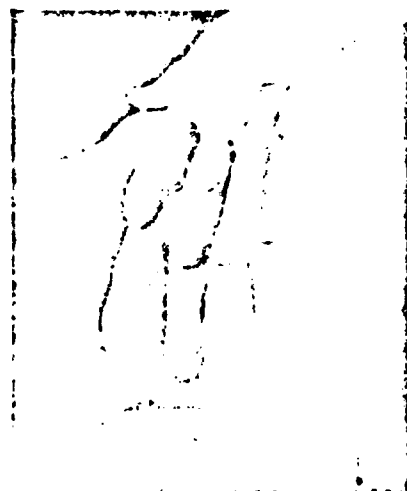
Engineering controls

22. Manufacturers should investigate the possibility of reducing the concentration of irritants in a compound or of substituting a less or non-irritating substance. A good example is the substitution of high flash naphtha for benzene in the production of rubber cement. Where no substitutes can be found for irritants, the process should be enclosed. Liquid and dry materials should be brought into the plant in sealed containers and be transferred by closed systems into storage sheds, tanks or bins. Many operations involving the use of acids or caustics can be totally enclosed, and vapors, dusts, and mists exhausted from the operation area.

23. In some processes it is possible to reduce exposure by lowering the temperature of the process and decreasing the air motion around the operation. Barriers and screens to prevent liquid splashes are often successful where systems cannot be completely enclosed.

Good housekeeping

24. Good housekeeping is important to prevent contact with contaminants and to demonstrate management commitment to prevention.



25. A protective cream before starting to work. The cream is washed off before lunch and reapplied after lunch. Proper use can provide an effective barrier against some dermatitis causing agents.

Frequent cleaning of floors, walls, ceilings, windows, and all work areas is best assumed by special maintenance personnel working on a planned schedule. Management must see that maintenance people assigned to cleaning are supplied with proper equipment, materials, and protective clothing, and are trained in safe procedures.

25. On a day-to-day basis supervisors and employees are responsible for making sure that spillages are cleaned up immediately.

26. In workshops, care should be taken to remove all the swarf in cutting oils as very fine metal particles can cause slight abrasions, which can start off dermatitis. All machines should be cleaned and have the oil changed periodically.

Protective clothing and equipment

27. Sometimes handling of irritants cannot be avoided even where there are modern engineering controls. In these situations the risk of direct contact can be minimized by having employees wear properly designed protective clothing such as overalls, aprons, gloves, sleeves, face shields, acid hoods, or special boots. The employer is required to provide the appropriate protection; management is required to keep protective equipment clean and in good repair; employees are required to use the protection provided, to hand it over for cleaning and to report any damage.

Personal cleanliness

28. For many exposures such as oil and dust frequent washing alone is a successful preventive measure. Employers should provide adequate washing facilities. Employees who work with hazardous chemicals should shower and change clothes before leaving the plant so that contaminants are not carried home.

29. A wide variety of industrial skin cleaners are available. The basic requirements for soaps and hand cleansers are:

- a) They should remove industrial dirt quickly and efficiently.
- b) They should not contain harsh abrasives, remove the skin's natural fats and oils, or otherwise irritate the skin.



Figure 6 illustrates the need to don protective clothing over regular work clothes before starting work in areas where hazardous substances may contaminate the worker, etc.

c) They should flow easily through dispensers.

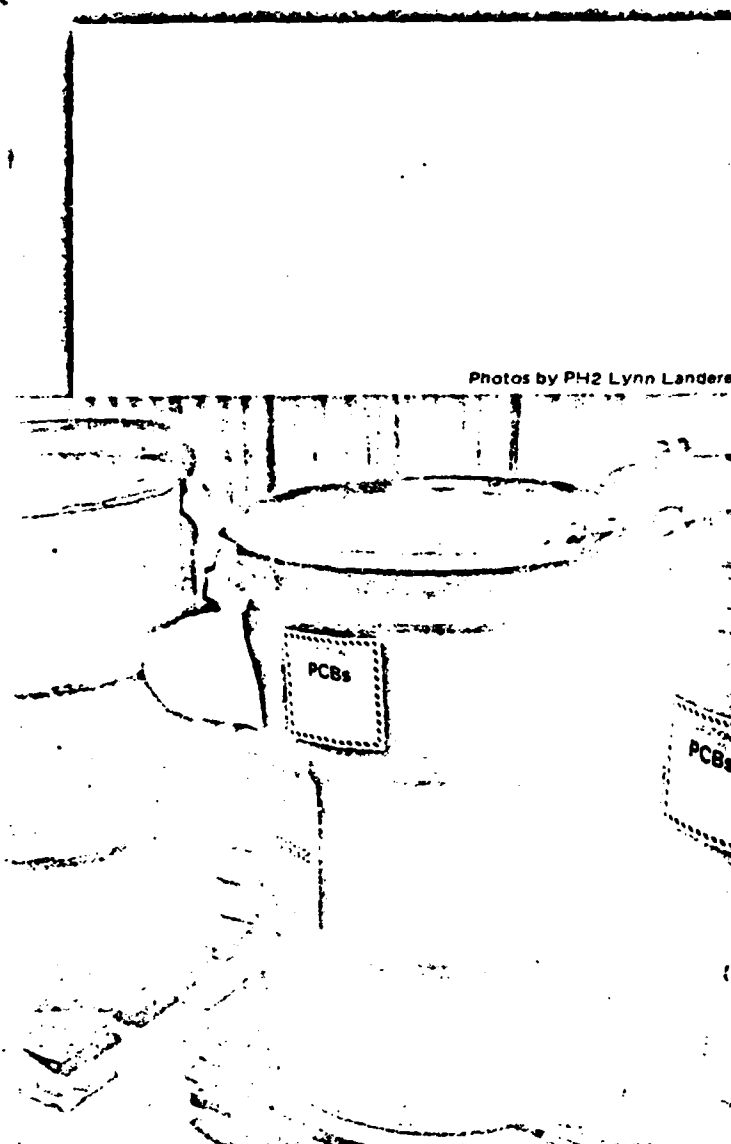
d) They should not deteriorate or become contaminated.

30. Where there is no piped water supply, waterless skin cleansers may be used with good results. In no case should solvents such as turpentine be used to remove industrial soil from the skin, as they may themselves cause dermatitis. After cleansing, the skin should always be dried thoroughly with clean towels to prevent chapping.

Barrier creams

31. On some jobs protective barrier creams may be successfully used to prevent contact with skin irritants. Creams should be selected on the basis of the characteristics of materials being used. The best known types of protective creams are those that contain chemicals to filter out the sun's ultra-violet rays, and thus prevent sunburn and chronic skin damage.

32. It is important to instruct employees in the purpose and correct use of the creams, i.e. that they should be applied before work periods and washed off before coffee and lunch breaks and at the end of the



Photos by PH2 Lynn Landerer

Barrels of PCB-contaminated material are carefully labeled and stored, waiting for disposal.

The ABC_s of PCB_s

By Diane Hamblen
Staff Writer
and

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MANKIND keeps on concocting compounds that end up doing more harm than good. At first polychlorinated biphenyls (PCBs) were a boon. Now they're a bane. Getting rid of PCBs is like the little boy picking chewing gum off his fingers. The harder he works at it the stickier the problem becomes. We survey, locate, store, and worry, but the PCBs are still there. And we continue to find more.

PCBs were first manufactured in 1929. More than 50 years later the Environmental Protection Agency (EPA) estimates that 440 million pounds of PCBs remain in American rivers, lakes, oceans, and dumps. Another 765 million pounds are still in transformers or in storage, waiting disposal.

PCBs are everywhere: in lubricants, transformer coolants, and hydraulic fluids. Paints, plastics, resins, inks, waxes, adhesives, rubber asphalt, and various building materials contain this elusive contaminant. Just like everyone else, DoD activities use these products all the time. The phasing out of PCB-laced materials will be a slow process.

EPA has determined that PCBs are a possible carcinogen. To compound the problem, PCBs are not broken down by nature to other less toxic chemicals. They remain intact when someone dumps them into the air, water, and soil. From there, PCBs are ingested through the food chain. Like DDT, PCBs settle in the fatty tissues of man and beast. The EPA now estimates that 91 percent of Americans carry a measurable quantity of the substance in their fatty tissues.

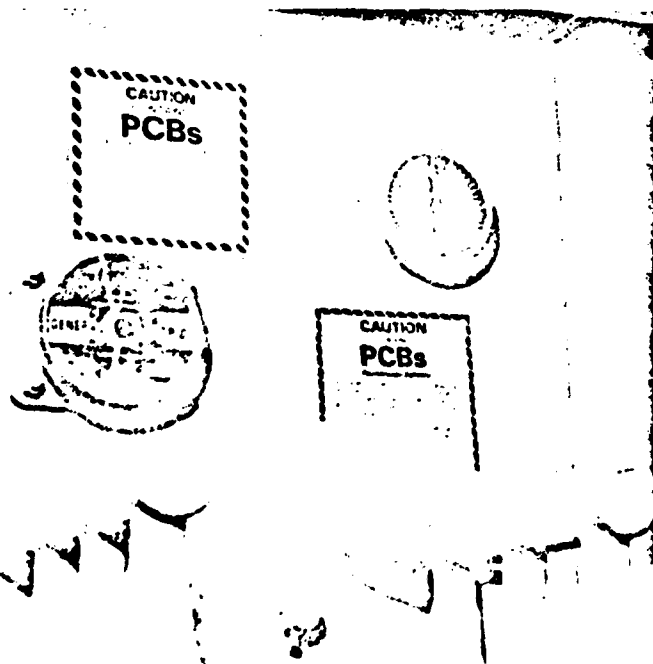
So much PCB waste was dumped into the Hudson River that the levels of PCBs in the tissues of rockfish reached 350 ppm — 70 times the "safe" level for food fish established

by the Food and Drug Administration in 1975.

Readers Digest in December 1980 reported that polar bears at the very top of the arctic food chain showed PCB levels of up to 8 ppm in their fatty tissues. "This was the first indication that PCBs are spread throughout the biosphere," John E. Sanders says. Sanders is chairman of New York State's PCB Settlement Advisory Committee and geologist at Barnard College.

One of the first recognized problems caused by polychlorinated biphenyls cropped up in Japan in 1968. About 1,000 people ate rice oil contaminated with PCBs. The accidental poisoning, known as Yusho disease, resulted when PCBs leaked out of cooling pipes during rice oil manufacture. Victims developed acne-like lesions, swelling of the upper eyelids, bloodshot eyes, changes in skin color, and liver problems. Japanese toxicologists studied the problem and discovered a significantly higher than normal number of liver and stomach cancers. Thirteen babies born to mothers who ate the rice oil during pregnancy had some of the symptoms of PCB poisoning. The Japanese government banned the manufacture of PCBs in 1972.

Understanding this complex compound isn't easy. PCBs are mixtures of chemicals consisting of two phenyl rings with from one to 10 chlorine atoms. This arrangement creates the possibility of as many as 209 isomers, depending on the number and position of the chlorine atoms. The drawing of a PCB chemical compound looks like a pair of reading spectacles. And PCBs are really making a spectacle of themselves these days. The perfect symmetry of the compound makes breaking it down just that much harder. Their stubborn stability is what has made PCBs so useful over the years. They have a high capacity for heat, low flammability, low vapor pressure, and low electrical conductivity. There are dibenzofuran trace impurities in commercial PCBs, and some scientists believe that is the real danger.



A March 16 Associated Press article describes a PCB-contaminated state government building in Binghamton, NY. During a fire more than 180 gallons of coolant laden with PCBs leaked out of an electrical transformer into the fire. "The intense heat and oxygen combined with the PCBs to produce an even more deadly poison," Dr. Arnold Schechter says. He is the Broome County health director and professor of preventive medicine at the state university's medical school in Binghamton, NY. "We've been trying to comprehend the magnitude of this astounding incident. Quite frankly none of us could believe it was happening for the first time anywhere right here in quiet Binghamton. We have a unique event that could only happen in the Chemical Age," he adds.

The Canadian government banned PCB transformers after a less extensive incident in Toronto in 1979.

North Carolina suffered one of the largest deliberate dumps of PCBs ever to hit the streets. Criminal truckers dumped thousands of gallons of PCB-laced oil on the roadsides in 15 counties in 1978. North Carolina has proposed removing the affected soil to landfills, but it has no approved hazardous waste disposal sites. The people responsible for the dumping have been convicted and fined. But the PCBs are still there, and North Carolina still has to find a way to clean up the environment. For the present all the state can do is post road signs warning of the contamination.

PCBs are a toxic triple threat. They are an industrial, environmental, and nutritional hazard. Congress identified PCBs as one of the first chemicals to be regulated under the Toxic Substances Control Act. On May 31, 1979, EPA published the final PCB ban. The total scope of the PCB regulations covers everything from the production ban and disposal.

But during recent court action involving the Environmental Defense Fund versus the Environmental Protection Agency, the D.C. Court of Appeals said, "Forty-six months after the effective date of an act designed to either totally ban or closely control the use of PCBs, 99 percent of the PCBs that were in use when the Act was passed are still in use. The EPA regulations can hardly be viewed as a bold step forward in the battle against life-threatening chemicals."

The magnitude of EPA's enforcement responsibilities is enormous. But recently EPA's Region 6 in Dallas TX, while tracking down used transformer oil, checked for PCB contamination in floor sweeping compounds. The result was a national safety alert warning agencies not to use floor sweeping compounds manufactured by Lycro Products of Dewart, PA. Watchdogging a problem as big as PCBs can be a tharkless task. The original problem still exists. What do you do with them when you find them?

There is light at the end of the tunnel. The Environmental Protection Agency recently approved two incinerators for

Conspicuous labeling of PCB transformers didn't start until 1979. This General Electric transformer is loaded with approximately 200 gallons of PCB coolant.

disposing of PCBs. In January 1981, the Rollins Environmental Services' Deer Park, TX incinerator was approved. By the end of January, EPA approved the Energy Systems Company (ENSCO) incinerator in El Dorado, AZ.

The destruction of PCBs requires temperatures in excess of 1,200°C, using a dwell time of 2 seconds in the combustion zone.

But even better than the news of the long-awaited incinerators is the new process for on-site detoxification of PCBs. In an AP interview, Edwin Clark, acting assistant administrator for the EPA, called it a "significant step forward toward resolving potentially one of the most serious public health issues we face."

PCBX chemically converts PCBs into nontoxic cooling and insulation fluids. PCBX provides on-site detoxification, eliminating the risk of transporting the dangerous chemicals to distant disposal sites. The cost of the PCBX process is estimated at \$3 per gallon.

The new chemical process couldn't get rid of all the PCBs. "The problem of the Hudson River could not be solved in this way," Clark points out.

Cleaning up the rivers is another matter indeed. *Readers*

Digest goes on to say, "A technology has been developed that could clean up hot spots where river sediments are especially contaminated. Hydraulic dredges would vacuum the PCB-laden sediments which could be piped or barged to special land disposal sites."

Money, as always, is also part of the problem. New York state has developed a \$40 million pilot removal program for the Hudson River. And Congress has finally allowed New York to use their clean water funds to dredge PCB hot spots.

Congress is considering a superfund of more than \$1 billion, provided by industry and government, to clean up various types of oil and chemical spills, leaks, and contaminated dump sites.

The technology and funding for getting rid of PCBs is fast becoming available, and PCBs may soon be only a dirty memory.

The military and private industry have successfully dealt with asbestos, DDT, and other massive health threats. Yet none of us is naive enough to think that getting rid of PCBs will solve more than a fraction of our problems with hazardous and toxic materials. Something else certainly lurks just around the corner. ●

The Navy answers EPA

THE Navy has its own PCB problems. As the article beginning on page 26 points out, PCBs are everywhere — including Naval installations. "EPA is taking the PCB problem very seriously," says Carl Zillig, Head Shore Facilities Branch for OPNAV, "and so is the Navy."

All of the Navy's shore activities are on distribution for the new OPNAVNOTE 6240 dated 29 June 1981. This notice contains the Navy's very latest guidance on PCBs. Until distribution of the notice is complete, here are a few things OPNAV has to say on the subject.

- An annual report showing the disposition of PCBs and PCB items must be developed by 1 July each year and kept on hand for EPA personnel. OPNAVNOTE 6240 has a report form detailing the required information. The form (OPNAV 6240/1) is approved for local reproduction.

- Any PCB article or PCB container stored for disposal before 1 January 1983 must be removed from storage and disposed of before 1 January 1984. Items designated for disposal must be stored in facilities that comply with specific design requirements. The facility must be operated, maintained, and inspected in accordance with specific requirements.

- Where there is an exposure risk to food and feed products by PCB transformers, the transformers must be visually inspected once a week beginning 17 May 1981. Inspection records must be kept, and cleaning and repair of the leaks must be started within 2 business days of their discovery. If there isn't any exposure risk to food and feed products, PCB transformers in use and transformers stored for reuse

must be visually inspected at least once every 3 months beginning on 9 August 1981. Inspection records must be maintained, and repair of moderate leaks must be started within 2 business days after the leak is found.

- Any PCB spill which exceeds the threshold (10 pounds) must be reported as prescribed in Chapter 7 of OPNAVINST 6240.3E.

- The Defense Logistic Agency (DLA) is the worldwide executive agent for the disposal storage of PCBs and PCB items within DoD. DLA will accept accountability for disposal storage of PCBs and PCB items.

The *Federal Register*, Vol. 46, No. 46 of 10 March 1981, 16090-16098 and the 40CFR761 contain most of the EPA regulations. These references didn't have wide distribution, but copies can be obtained from the Naval Facilities Engineering Command, Engineering Field Divisions (NAVFACENGCOM EFD). The new OPNAVNOTE addresses the principal elements of the EPA requirements.

The PCB Compliance, Assessment and Spill Control Guide (NESO 20.2-028) gives detailed, concise summaries of the 40CFR761 requirements, practical information on complying with the requirements, and the occupational health aspects of handling PCBs. This guide is much easier to interpret than the insides of the *Federal Register*, and copies are available from the Naval Energy and Environmental Support Activity, Port Hueneme, CA 93043.

The new words from OPNAV should be on the street and in your mailboxes any day now.

Be on the lookout. ●