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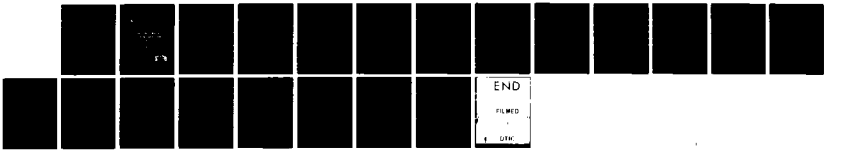

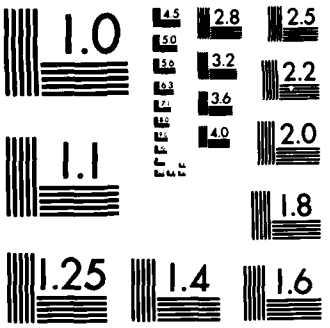

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AUGUST 1982

CIVIL ENGINEERING

Hazardous Waste Storage and Transfer Facilities

Design Manual 5.13

APPROVED FOR PUBLIC RELEASE

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
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Compatibility of wastes; hazardous material; hazardous substance; hazardous waste; housing requirements; operating procedures; preventive maintenance; safety and emergency procedure; site selection; transfer and storage facilities.

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Basic guidance for the design of hazardous waste storage and transfer facilities is presented for use by experienced architects and engineers. The manual includes design guidelines for site selection, safety, security, communications, utilities, and building construction, and operational guidelines for routine operation, safety and emergency procedures, and closure and post-closure plans.

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ABSTRACT

Basic guidance for the design of hazardous waste storage and transfer facilities is presented for use by experienced architects and engineers. The manual includes design guidelines for site selection, safety, security, communications, utilities, and building construction, and operational guidelines for routine operation, safety and emergency procedures, and closure and post-closure plans.

FOREWORD

Naval Facilities Engineering Command publications are issued by the Documentation Division in conformance with NAVFAC standards and in accordance with regulations of the Department of the Navy and the Joint Committee on Printing of the Congress of the United States.

This design manual is one of a series developed from an evaluation of shore facilities, surveys of new materials and construction methods, and the best design practices of the Naval Facilities Engineering Command, other government agencies, and the private sector. To the greatest extent possible, this manual uses the standards of national professional societies, associations, and institutes in accordance with NAVFACENGCOM policy. Deviations from these criteria should not occur without prior approval of NAVFACENGCOM Headquarters (Code 04).

Recommendations for improvement of the design are encouraged from within the Navy and from the private sector and should be furnished to NAVFACENGCOM Headquarters (Code 04). As the design manuals are revised, they are being restructured. A single chapter or several chapters will be issued as a separate design manual to facilitate reference to criteria on a specific topic.

This publication is certified as an official publication of the Naval Facilities Engineering Command and has been reviewed and approved in accordance with SECNAVINST 5600.16.

W. M. Zobel
Rear Admiral, CEC, U. S. Navy
Commander
Naval Facilities Engineering Command

CIVIL ENGINEERING DESIGN MANUALS

DM NO.	Superseded Chapters in Basic DM-5	TITLE
5.1	1	Surveying
5.2	2	Hydrology and Hydraulics
5.3	3	Drainage Systems
5.4	4	Pavements
5.5	5	General Provisions and Geometric Design for Roads, Streets, Walks, and Open Storage Areas
5.6	6 & 7	Trackage
5.7	9	Water Supply Systems
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5.9	11	Metering, Instrumentation and Control, and Chemical Feeding
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5.11	13	Soil Conservation
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5.13	-	Hazardous Waste Storage and Transfer Facilities

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TABLES

Section 1. BACKGROUND INFORMATION

1. SCOPE. The criteria in this manual shall govern the design of hazardous waste storage and transfer facilities. The manual provides guidelines to ensure that the transfer and storage of hazardous wastes will meet the federal criteria mandated by Title 40 of the Code of Federal Regulations (CFR), Parts 260 through 266.

2. RELATED CRITERIA: Criteria related to hazardous waste facilities appear elsewhere in the design manual series, as follows:

Subject	Source
Civil Engineering	
Pavements	NAVFAC DM-5.4
Roads, streets, walks, and open storage areas	NAVFAC DM-5.5
Hydrology and hydraulics	NAVFAC DM-5.2
Drainage systems	NAVFAC DM-5.3
Fencing, gates, and guard towers	NAVFAC DM-5.12
Electrical Engineering	NAVFAC DM-4.1 through 4.7
Fire Protection Engineering	NAVFAC DM-8
Mechanical Engineering	
Heating, Ventilation, and Air Conditioning	NAVFAC DM-3.3
Soil Mechanics	NAVFAC DM-7

3. GENERAL BACKGROUND DISCUSSION. The impetus for legislation to control the storage, transfer, and treatment of hazardous wastes was provided by several well publicized events, among them the oil spill on the English coast from the Torrey Canyon, the blow-out of an off-shore drilling platform in the California Channel, the improper disposal of hazardous wastes at the Valley of Drums in Kentucky, and poor post-closure control of an acceptable hazardous waste disposal site at the Love Canal in New York.

This manual covers two types of facilities: a short-term storage facility, where materials are stored for periods of less than 90 days, and a long-term storage facility for materials stored greater than 90 days. The short-term facility does not require a permit to operate, but is required to meet all packaging and labeling requirements and to date the receipt of hazardous wastes. The requirements for short-term facilities are given in 40 CFR 262.34. The long-term facility is a permanent facility subject to the requirements of 40 CFR, parts 264 and 265, and the permit requirements of 40 CFR, part 122.

The design requirements set forth in this manual are mandatory for the long-term facility and desirable for the short-term facility. It has been assumed that covered storage will be required to minimize the run-off from the facility and that the run-off will be collected and treated. In climates where run-off will not create a problem, open storage would be acceptable.

The modification of existing facilities is an acceptable alternative to the construction of new facilities.

4. DEFINITIONS. A hazardous material is any substance whose properties can create a toxic or hazardous environment, either alone or in conjunction with another substance. Hazardous materials are defined as follows:

a. Hazardous Material. Hazardous materials are defined in 49 CFR 171.8 as "a substance or material which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated."

b. Hazardous Substance. Hazardous substances are those elements and compounds appearing in Tables 116.4A and B of 40 CFR 116.

c. Hazardous Waste. Hazardous wastes are defined in 40 CFR 261.3, which states in part: "A solid waste is a hazardous waste if it is not excluded from regulation, if it has not been excluded in Subpart D, and if it exhibits any of the characteristics of Subpart C, i.e., ignitability, corrosivity, reactivity or EP [extraction procedure] toxicity."

5. POLICY. The facility shall be designed to meet federal, state, and local codes. The criteria applicable to the design of hazardous waste storage and transfer facilities are as follows:

a. OPNAVINST 6240.3 series, Environmental Protection Manual.

b. MC Order P11000.8 series, Real Properties Facilities Manual, volume 5, Environmental Management.

c. Storage and Handling of Hazardous Materials, DOD 4145.19-R-1.

d. Hazardous Materials Information System (HMIS), DOD Instruction 6050.5.

e. Consolidated Hazardous Item List (CHIL), NAVSUP 4500, July 1980.

f. Navy Hazardous Materials Environmental Management Program - Guide for the Hazardous Waste Management Plan, NESO 20.2-029.

g. Resource Conservation and Recovery Act, PL 94-580, Subtitle C, as regulated by 40 CFR, Parts 122 through 124 and 260 through 266.

h. OSHA Safety and Health Standards (29 CFR 1910).

i. Hazardous Chemical Data and Chemical Reactions, National Fire Protection Association (NFPA), vol. 13.

j. Department of Transportation requirements (49 CFR, Parts 171 through 179).

k. National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 1510).

l. PCB Storage (40 CFR 761).

m. Reviewing Agencies. Plans and specifications shall be available for review by the Environmental Protection Agency or by a state agency approved by EPA. Plans and specifications shall be reviewed by the local fire agency, if the facility is served by local fire protection.

n. Environmental Assessment. As a minimum, a preliminary environmental assessment (PEA) shall be prepared in accordance with OPNAVINST 6240.3 or MC Order P11000.8. The findings of this analysis will determine whether a more extensive environmental document is required.

6. DESIGN INFORMATION. The quantity and type of hazardous materials to be stored are listed in hazardous materials environmental management surveys and hazardous waste management plans, which can be obtained from the base commander. All facilities that store wastes 90 days or longer shall comply with the requirements of the EPA-administered hazardous waste permit program, 40 CFR 122.

Section 2. DESIGN GUIDELINES

1. SITE SELECTION. The selection of a site for the storage and transfer facility is an important part of the design effort. Guidelines for a long-term facility are given in 40 CFR 264.18.

a. Proximity to Critical Areas. A buffer zone of 150 meters (500 feet) shall be provided between the facility and the nearest inhabited area, stream, body of water, or critical mission area such as Ammo., POL, or flammable stores.

b. Groundwater Hydrological and Chemical Data. The designer shall determine variations in groundwater elevation and the direction of groundwater flow. Although the definitive drawings depict an above-ground structure, the use of berms to provide emergency egress creates an underground emergency holding basin. Background chemical data for the groundwater will provide a basis for determining the effect of any leakage or accidental spill. The analyses to be made are listed in 40 CFR 265.92. In addition to these analyses, background analyses of the water should be made to determine if there are existing concentrations of any hazardous waste to be stored at the facility.

c. Surface Water Hydrological Data. The site shall be above, or protected from, the 100-year flood elevation. The surface water elevations for a 100-year flood can be obtained from the U.S. Army Corps of Engineers. The basis for determining the 100-year flood is given in 40 CFR 264.18.

d. Soil Information. The engineering characteristics of the soil shall be determined at the locations of the building and the access roads. The cation exchange characteristics of the soil shall be determined at a minimum of two points on the site. This information will be used to determine the capacity of the soil to retain metal constituents in the event of a spill.

e. Geological Information. If the facility is located in a political jurisdiction listed in Appendix VI of paragraph 40 CFR 264.18, the facility shall not be within 61 meters (200 feet) of a fault which has had displacement in Holocene time. (Holocene time refers to the most recent geological time period, including approximately the last 11,000 years.)

f. Meteorological Data. The information provided for the design of a facility incorporates meteorological data to establish structural and mechanical criteria. The designer must also determine the prevailing wind direction. This information shall be used to situate the facility so that, in the event toxic gases are released, the effect on populated areas will be minimized.

g. Accessibility. The facility shall be located where there are access roads of adequate load-bearing capacity and where routing through residential areas will not be required.

h. Utilities. The requirement that the facility be operable at all times will affect the design of the electrical and water systems. The electrical system should have an alternate source of power with automatic switching between the sources, although a portable generator would be an acceptable substitute. The use of sprinklers for a portion of the fire protection system makes a looped water system desirable. Backflow prevention for the potable water is necessary. A sanitary sewerage system is required for the restrooms and laboratory.

2. GENERAL REQUIREMENTS. General criteria for electrical design, heating, ventilation, and air conditioning, and materials of construction are summarized in Table 1.

a. Safety.

(1) Access and Egress. Access to and egress from the storage facility shall be restricted to periods when the facility is manned. Opening and closing of the gates shall be remotely controlled from the storage facility. During periods when the facility is not manned, both the gates and the facility shall be monitored by television or by an intrusion-detection system at the nearest guard house. In accordance with 40 CFR 264.14(c), a sign visible from 8 meters (25 feet) shall be placed on all access roads to the storage facility. The sign shall have the legend: "Danger - Unauthorized Personnel Keep Out."

TABLE 1

GENERAL DESIGN REQUIREMENTS
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITIES

			ELECTRICAL			MATERIALS OF CONSTRUCTION				FIRE PROTECTION	
Area	Ventilation	Heat or AC	Explosion-Proof	Corrosion-Resistant	NEMA Type	Fire-Resistant	Non-Absorbent	Corrosion-Resistant	Drains	Sprinkler Density	Explosion Venting
Office	Positive Pressure	H&AC	No	No	1	Yes	No	No	N/A	0.16 gpm/ft^2	No
Clean Room Dirty Room	Positive Pressure	Heat	No	No	1	Yes	No	No	Sanitary Sewer	0.16 gpm/ft^2	No
Lavatory	Positive Pressure	Heat	No	No	4	Yes	No	No	Sanitary Sewer	0.16 gpm/ft^2	No
Lunch Room	Positive Pressure	H&AC	No	No	7	Yes	No	No	N/A	0.16 gpm/ft^2	No
Laboratory	Positive Pressure	H&AC	No	Yes	4X	Yes	Yes	Yes	Sanitary Sewer & Captured	0.29 gpm/ft^2	No
Repacking Facility	Negative Pressure	Heat	Yes	Yes	7	Yes	Yes	Yes	Captured	0.35 gpm/ft^2	Yes
Acid Wastes	Negative Pressure	Heat	No	Yes	7	Yes	Yes	Yes	Captured	0.35 gpm/ft^2	No
Organic Wastes	Negative Pressure	Heat	Yes	Yes	7	Yes	Yes	Yes	Captured	0.35 gpm/ft^2	Yes
Caustic Wastes	Negative Pressure	Heat	No	Yes	7	Yes	Yes	Yes	Captured	0.35 gpm/ft^2	No
Reactive Wastes	Negative Pressure	Heat	Yes	Yes	4X	Yes	Yes	Yes	Captured	Dry	Yes
Oxidizer Wastes	Negative Pressure	Heat	Yes	Yes	7	Yes	Yes	Yes	Captured	0.5 gpm/ft^2	No
General Wastes	Negative Pressure	Heat	Yes	Yes	7	Yes	Yes	Yes	Captured	0.35 gpm/ft^2	Yes
Unknown Wastes	Negative Pressure	Heat	Yes	Yes	7	Yes	Yes	Yes	Captured	Dry	Yes
Mechanical Room	N/A	Heat	No	No	1	Yes	No	No	Sanitary Sewer	0.16 gpm/ft^2	No

(2) Showers and Eye-Wash Station. A minimum of three emergency showers and eye-wash stations shall be provided for both facilities, in the acid storage area, the caustic storage area, and the repackaging area, respectively.

(3) Ventilation. All generally occupied areas shall have positive-pressure ventilation in enclosed spaces, as shown in Table 1. Negative pressure shall be used for all other areas. Ventilation shall conform to OSHA Standard 1910.106 for flammable liquid vapors. Dehumidification of the air and exhausting to the outside are recommended for storage areas containing materials that react with water or that have corrosive vapors, specifically the acid waste, unknown waste, and reactive waste storage areas, and the repackaging area. Storage and/or transfer areas containing materials hazardous to health shall be ventilated in accordance with 29 CFR 1910.94.

(4) Fire Protection. With the exception of the reactive and the unknown waste storage areas, all other areas shall be protected by a sprinkler system as per NAVFACENGCOM Design Manual-8 series Fire Protection Engineering, April 1981. Since reactive wastes react violently with water, the storage area for these wastes shall be protected by a dry-type system.

The floor densities required for the various storage areas shall be determined by DOD 4145.19-R-1 and as indicated in Table 1. The use of sprinkler systems in areas containing hazardous wastes requires that the facility capture a minimum of 15 minutes of the sprinkler water flow. The captured water may be analyzed to determine if it should be classified as a hazardous waste. In the absence of analysis, or if the analysis determines that it is hazardous, the captured water must be properly packaged, labeled, and stored. If not a hazardous waste, the water may be discharged into the sanitary sewer.

(5) Explosion Venting. The design of explosion venting shall be in accordance with NFPA Standard No. 96, Guide for Explosion Venting.

(6) Personnel Safety. In addition to the emergency shower and eye-wash systems previously specified, lockers for two sets of protective clothing and self-contained breathing apparatus with a minimum service period of 30 minutes shall be available for all personnel at the entrances to the storage area. The requirements set forth in 29 CFR 1910, Subpart I, Personal Protective Equipment, shall apply.

b. Communications.

(1) Both telephone and wireless communications shall be provided.

(2) Internal communications shall consist of a master and station receive and talk.

(3) Alarms. Location of emergency alarms shall provide activation from each storage area, the repackaging area, and the office and laboratory. A fire alarm system shall be provided as required by NAVFAC DM-8, with alarm transmitted over the station's fire alarm system upon activation of the interior fire alarm system.

c. Security. If the facility is located in a secure area, the fence for the storage area shall be 15 feet from the outside perimeter road of the facility. If the facility is not located in a secure area, two fences will be required: the inside fence as noted above and the outside fence around the perimeter of the site. The fence shall have a minimum height of 2 meters (6 feet) and shall be of the chain-link type.

d. Vehicle Cleaning. Vehicles used to carry hazardous waste shall be cleaned if any container of waste develops a leak. The recommended cleaning procedure is to use absorbent materials such as granular clay and the minimum volume of water. After use, the absorbent material and wash water shall be packaged and stored in the appropriate storage area.

e. Electrical.

(1) Yard Lighting. The access road and the fenced-in area shall be illuminated to a level of 0.5 footcandle. Fixtures shall be equipped with either a time clock or a photoelectric control.

(2) Interior lighting shall generally be rapid-start fluorescent, NEMA 7, and shall provide 50 footcandles in offices, labs, and repackaging areas and 10 footcandles in storage areas.

(3) All raceways shall be aluminum fiberglass-reinforced plastic, or equivalent material, and shall be installed in accordance with the National Electrical Code (NEC) for hazardous locations.

3. HOUSING REQUIREMENTS. This manual covers the design of short-term and long-term storage facilities. Certain housing components are common to both facilities, while others are required only for the long-term facility. The general design criteria are summarized in Table 1. Additional considerations are listed below:

a. Office. Both facilities require an office. In addition to desks, a word processor, and filing cabinets, the long-term facility should have a computer terminal so that the central computer may be used for record keeping and inventory control.

b Repackaging Facility. Repackaging capability shall be provided for both facilities. The functions required are repackaging the contents of damaged containers, disposing of the damaged containers, packaging and labeling, and storing new packaging and spill-control materials.

c. Laboratory. The analytical requirements for the short-term storage facility are limited to pH, acid-base titration, specific gravity, and the open-cup flame test. In addition to the customary bench space, refrigerator, and sinks, a hood for the open-cup flame test shall be included in the collateral equipment. The long-term facility shall have the analytical

capability to identify the corrosivity, ignitability, reactivity, and toxicity of unknown wastes using the procedures listed in EPA Manual SW 646. In addition to the collateral equipment for the short-term facility, an additional hood for the acid digestion procedure may be desirable. In the event that analytical capability already exists at the site of the facility, or that contractor services are readily available, these requirements may be waived.

d. Absorbent Material for Spills. All facilities shall maintain a supply of safety absorbent material for application to liquid spills and leaks. This material, an inert clay in granular form, will contain the spills and permit recovery and repackaging.

e. Personnel Facilities. All facilities shall be designed using the clean room/dirty room concept, with lockers in the clean room and dirty room. Showers and toilet facilities shall be available between the rooms. A lunch area shall be provided in the office area.

4. TRANSFER AND STORAGE FACILITIES. The transfer and storage area shall be a totally enclosed structure. The general design criteria are shown in Table 1 and Definitive Designs for Naval Shore Facilities, NAVFAC P-272, Category Code: 143-78. The objective of the design is to prevent surface water from reaching the facility and to capture completely each class of waste individually. This will eliminate the need for a National Pollution Discharge Elimination System (NPDES) permit. The access and egress roadway and the middle of the building shall be designed for an H-20 wheel loading. The water lines to the washdown and sprinkler systems shall be equipped with a backflow preventer. Other design considerations include the requirement to isolate acid storage from the other categories of waste, the requirement to isolate flammable liquids from acids and oxidizers, and the desirability of isolating the acids containing organics from the oxidizing acids. The quantities of each material to be stored may be obtained from the HMIS information; the stacking heights and clearance requirements may be obtained from DOD 4145.19-R-1, Chapter 5, and 29 CFR. One area shall be set aside for storing unidentified wastes until a chemical analysis can be made. The handling method will depend on the quantity and packaging of the waste to be handled.

Section 3. OPERATIONAL GUIDELINES

1. OPERATING PROCEDURES. Nonleaking containers labeled in accordance with DOT/EPA standards shall be taken directly to storage. Unlabeled nonleaking containers shall be taken to the area set aside for unknown wastes awaiting chemical identification. The contents of leaking containers shall be repackaged, and the transporting vehicle shall be cleaned prior to release.

2. COMPATIBILITY OF WASTES. The storage areas have been divided into six categories according to the chemical characteristics of the hazardous wastes. The groups were selected from the EPA publication, "A Method for Determining the Compatibility of Hazardous Wastes," EPA-600/2-80-076, April 1980. These categories are as follows:

a. Acid Wastes. Wastes containing inorganic acids with a pH of 4.0 and below.

b. Caustic Wastes. Wastes containing inorganic bases with a pH of 9.0 and above.

c. Organic Wastes. Wastes containing nonreactive organic materials.

d. Oxidizer Wastes. Wastes containing oxidizing inorganic compounds.

e. Reactive Wastes. Wastes that react violently with water.

f. General Wastes. Wastes that are not chemically active and not primarily organic in nature.

The general chemical characteristics of each category should be considered in planning the location of each storage area. Table 2 should be used to locate the storage areas on the basis of the compatibility of various categories. Compatible wastes may be separated by a single partition. Incompatible wastes shall be separated by more than a single wall.

TABLE 2

COMPATIBILITY OF HAZARDOUS WASTE CATEGORIES

	Acid	Caustic	Organics	Oxidizers	Reactive	General
Acid	--	NC	NC	NC	NC	NC
Caustic	NC	--	NC	C	NC	NC
Organics	NC	NC	--	NC	NC	NC
Oxidizers	NC	C	NC	--	NC	C
Reactive	NC	NC	NC	NC	--	NC
General	NC	NC	NC	C	NC	--

C - Compatible, NC - Not Compatible

3. RECORD KEEPING, INVENTORY CONTROL, AND DATA MANAGEMENT. The Environmental Protection Agency requires waste generators and storage facilities to file reports with the EPA's regional administrator or the applicable state agency. Copies of the annual report must be retained for 3 years. To maintain an accurate current inventory of the hazardous wastes, a computer terminal may be provided in the office area for both facilities.

4. VEHICLE CLEANING. As noted in paragraph OPERATING PROCEDURES, vehicles used to transport hazardous wastes in leaking containers shall be cleaned prior to release, either in the dock area or vehicle access area. The use of absorbents and minimal wash water is recommended. All wash water and absorbents shall be captured, packaged, and placed in the proper storage area.

5. SAFETY AND EMERGENCY PROCEDURES. The design of the facility shall incorporate as many safety considerations as possible, but the first line of defense is properly trained personnel familiar with the properties of the wastes and the additional hazards that might occur with improper handling or mixing. Strict compliance with OSHA's permissible exposure limits (29 CFR 1910.1000-1028) is essential at all times. An industrial hygiene evaluation will quantify air-borne contaminant levels during routine operations. Emergency situations will necessitate the use of self-contained breathing apparatus in accordance with 29 CFR 1910.34.

The designer shall obtain a copy of the spill contingency plan from the Activity and incorporate the plan into the design of the facility. The passive measures incorporated in the design, such as holding tanks for spill control, shall be enumerated by the designer for incorporation in the Spill Control and Countermeasures (SPCC) Base-Wide Plan.

6. CONTINGENCY OPERATING PROCEDURES FOLLOWING SPILLS. The Activity's contingency plan shall provide detailed information concerning procedures for handling spills.

7. PREVENTIVE MAINTENANCE AND PERSONNEL TRAINING. Daily inspection of storage containers will minimize the occurrence of hazardous conditions. Such inspections shall meet or exceed EPA requirements. Maintenance of an adequate supply of clean-up material is essential. Monthly inventories will aid in keeping records current.

8. CLOSURE AND POST-CLOSURE. A closure and post-closure plan shall be developed and kept on file at the facility. The requirements for the plans are found in 40 CFR 264, Subpart G. Prior to closure, the plans must be approved by EPA or its designated agency.

REFERENCES

(Publications containing criteria cited in this manual)

National Fires Codes, 16 vols. (latest edition). National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

U. S. Code of Federal Regulations. (GPO, 1980.)
Title 29, Labor, Part 1910
Title 40, Protection of Environment, Parts 116, 122-124, 151, 260-266, 761, 1510.
Title 49, Transportation, Parts 171-179.

U. S. Department of Defense
Construction Criteria, DOD 4270.1-M (latest edition).
Hazardous Material Information System, DOD Instruction 6050.5 (25 January 1978).
Storage and Handling of Hazardous Materials, DOD 4145.19-R-1 (September 1979).

U. S. Department of the Navy
Consolidated Hazardous Item List: Storage and Handling, NAVSUP 4500 (Navy Fleet Material Support Office, July 1980).
Environmental Management, vol. 5, Real Properties Facilities Manual, MC Order P11000.8 series.
Navy Hazardous Materials Environmental Management Program, OPNAV Instruction 6240.3 series - Environmental Protection Manual (latest edition).
Navy Hazardous Materials Environmental Management Program--Guide for the Hazardous Waste Management Plan, NESO 20.2-029.

NAVFACENGCOM Design Manuals.

DM-3 series: Mechanical Engineering

DM-4 series: Electrical Engieering

DM-5 series: Civil Engineering

DM-7 series: Soil Mechanics, Foundations and Earth Structures

DM-8 series: Fire Protection Engineering

Department of Defense activities may obtain copies of Design Manuals and P-Publications from the Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120. Department of Defense activities must use the Military Standard Requisitioning and Issue Procedure (MILSTRIP) using the stock control number obtained from NAVSUP Publication 2002.

Other Federal Agencies and commercial organizations may procure Design Manuals and P-Publications from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402. The U. S. Code of Federal Regulations and public laws in Statutes at Large are also available from this source.

Military/Federal, and NAVFAC Guide Specifications are available to all parties, free of charge, from the Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120. Telephone: Autovon (DoD only): 442-3321; Commercial: (215) 697-3321.

U. S. Environmental Protection Agency.
A Method for Determining the Compatibility of Hazardous Wastes, EPA-600/2-80-076 (April 1980).
Test Methods for Evaluating Solid Wastes, EPA SW 646 (1980).

EPA-600/2-80-076 may be ordered from the Municipal Environmental Research Laboratory, Office of Research and Development, U. S. Environmental Protection Agency, Cincinnati, OH 45268. EPA SW 646 may be ordered from EPA's Office of Water and Waste Management, Washington, D. C. 20460.

U. S. Public Law 94-580, Subtitle C (21 October 1976), pp. 12-19.


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