

TB MED 593

TECHNICAL BULLETIN

GUIDELINES FOR FIELD WASTE MANAGEMENT

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HEADQUARTERS, DEPARTMENT OF THE ARMY

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 MEDICAL 593

HEADQUARTERS
 DEPARTMENT OF THE ARMY
 Washington, DC, 15 September 2006

GUIDELINES FOR FIELD WASTE MANAGEMENT

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This is a new Department of the Army technical bulletin.

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CHAPTER 1

INTRODUCTION

1–1. Purpose

This bulletin provides technical guidance to the preventive medicine community on the proper management of waste in field settings. This guidance will ensure waste is managed in a manner that is protective of human health and the environment, and is consistent with Army requirements.

1–2. References

Required and related publications and prescribed and referenced forms are listed in appendix A.

1–3. Explanation of abbreviations and terms

The glossary contains a list of abbreviations and terms used in this publication.

1–4. Applicability

This publication—

- a.* Applies to the Active Army, U.S. Army Reserve, and Army National Guard.
- b.* Applies to field training exercises in the United States or overseas and deployments in support of contingency, stability, or support operations.

1–5. Technical assistance

Additional guidance can be obtained from the United States Army Center for Health Promotion and Preventive Medicine (USACHPPM) homepage at <http://usachppm.apgea.army.mil> or by contacting one of the following:

- a.* USACHPPM, Directorate of Environmental Health Engineering (MCHB-TS-E), 5158 Blackhawk Road, Aberdeen Proving Ground, Maryland 21010-5403; phone: DSN 584–2306, commercial 410–436–2306; or electronically at <http://usachppm.apgea.army.mil/dehe>.
- b.* USACHPPM-Europe, Environmental Engineering Division (MCHB-AE-EEH), CMR 402, APO AE 09180 (Landstuhl, Germany); phone: DSN 314–486–8959, commercial 011–49–6371–86–8959; or electronically at <http://www.chppmeur.healthcare.hqusareur.army.mil>.
- c.* USACHPPM-Pacific, Environmental Health Engineering Division (MCHB-AJ-TEE), Unit 45006, APO AP 96343-5006 (Camp Zama, Japan); phone: DSN 315–263–8551, commercial 011–81–3117–63–8551; or electronically at <http://www.usarj.army.mil/organization/chppm-pac/ehed.htm>.

1–6. Provisions

Within the United States and its territories, the military must comply with U.S. Environmental Protection Agency regulations, as well as state and local requirements. The obligation to adhere to these regulations is not altered by funding considerations. On military installations overseas,

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Army units must adhere to country-specific Final Governing Standards (FGS). If no FGS exist, units must comply with Department of Defense (DOD) 4715.5-G, Overseas Environmental Baseline Guidance Document (Note: DOD 4715.5-G does not apply to off-installation deployments such as contingency operations). Army operation orders/plans should also address waste management procedures in annex F (Engineer) and/or in annex I (Service Support). Joint orders/plans should include waste management requirements in annex D (Logistics), annex L (Environmental Considerations), and/or annex Q (Medical Services).

CHAPTER 2

ROLES

2-1. Background

Proper management of field waste is critical in protecting the health of Soldiers and the environment. Improper handling can create dangerous working conditions, damage vital natural resources, impede mission accomplishment, and cause irreparable harm to training areas. Poor waste management practices can also lead to criminal and civil penalties, substantial cleanup costs, and detract from the military's relationships with local communities and host nations. As a result, the DOD demands integration of environmental considerations into all military planning and decision making. Sound environmental stewardship helps keep the Army relevant and ready.

2-2. Roles

- a. Commanders at all levels will—
 - (1) Ensure the proper management of their unit's waste, and ensure management practices are protective of human health and the environment.
 - (2) Ensure subordinates are trained on proper waste handling and disposal procedures.
 - (3) Strive to instill an environmental ethic in every Soldier.
- b. Logistics staffs (for example, S-4, G-4, or J-4) will plan, coordinate, task, and fund waste management support.
- c. Defense Logistics Agency (DLA) will—
 - (1) Contract removal and disposal of hazardous and special wastes through the Defense Reutilization and Marketing Service (DRMS).
 - (2) Identify opportunities for reutilization, transfer, donation, or sale of other solid wastes.
- d. Preventive medicine personnel/units will—
 - (1) Provide technical oversight of waste management programs, and assist commanders and staffs with the development and revision of waste management policies.
 - (2) Coordinate with contracting officers (via logistics staff) to ensure the impact on Soldier health is considered in all waste disposal contracts.
 - (3) Monitor environmental compliance during deployments and provide input to the Defense Contract Management Agency's Quality Assurance Representatives regarding contractor performance.
 - (4) Conduct occupational and environmental health surveillance sampling to assess and document exposures during waste management activities.
 - (5) Assist commanders with risk communication programs in order to address and minimize concerns related to waste management methods.
- e. Directorate of Public Works (DPW) will—
 - (1) Establish installation waste management policies.
 - (2) Provide direct waste management support to tenant units in garrison.

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f. Engineers will manage the disposal of all categories of wastes (except medical waste) in a theater of operations. The Corps of Engineers, facility engineer units, and maneuver engineer units often fill the role of the DPW in field settings. Engineering support may also be provided by civilian contractors, Navy Seabees, or Air Force RED HORSE units.

g. Contractors will adhere to all environmental requirements specified in their contracts. The current policy within the continental United States (CONUS) and outside the continental United States (OCONUS) installations, and forward-deployed bases, is to contract waste management as much as possible. The Logistics Civil Augmentation Program provides a large portion of this support during contingency operations.

h. Contracting Officers will—

(1) Determine which environmental and waste disposal requirements are included in contracts.

(2) Decide how those contracts will be administered. Contracting officers are the only personnel authorized to modify a contract.

i. Unit Field Sanitation Teams (FSTs) will—

(1) Provide waste management assistance at the company level and below.

(2) Assist in the construction and maintenance of solid and human waste disposal devices.

(3) Monitor company-level waste management programs, including the proper use of personal protective equipment (PPE).

(4) Provide recommendations on waste reduction to the command.

j. Individual Soldiers will—

(1) Comply with all applicable environmental requirements, including installation policies and unit standing operating procedures (SOPs).

(2) Take action to prevent environmental damage.

(3) Inform the chain of command of any spills or other violations.

(4) Provide recommendations to improve current waste management practices.

(5) Use proper PPE during waste management activities.

CHAPTER 3

SOLID WASTE (NONHAZARDOUS)

3–1. Scope

Solid waste (SW) includes garbage, rubbish, hazardous waste (HW), regulated medical waste, and human waste. This section only covers the management of garbage and rubbish (trash), which constitutes most of the waste generated by field activities. Garbage and rubbish include items such as discarded paper, plastic, cardboard, wood, metal, glass, construction debris, and food waste. Other types of SW are discussed in later chapters of this technical bulletin, medical (TB MED) as follows: hazardous and special waste – chapter 4, medical waste – chapter 5, and human waste – chapter 6.

3–2. Deployment planning

Effective waste management programs during deployments begin with careful planning. Prior to Army units occupying a base camp overseas, the Corps of Engineers (or other designated entity) should conduct an environmental baseline survey (EBS) of the proposed location according to field manual (FM) 3-100.4. The EBS identifies the general geologic, hydrogeologic, hydrologic, and/or topographic conditions of the area, as well as the potential for contaminant migration. In conjunction with the EBS, engineer and preventive medicine personnel should also conduct an environmental health site assessment (EHSA) according to American Society for Testing and Materials (ASTM) E2318-03. The EHSA identifies exposure pathways that may affect the health of deployed personnel. Evaluation of the EBS and EHSA results helps leaders select the best disposal methods for solid waste (for example, landfill burial, incineration, or backhauling) and the best PPE for use during disposal activities.

3–3. Source reduction and reuse

Commanders, supervisors, and FST members should continually seek ways to reuse or reduce the generation of waste materials. Source reduction and reuse are the preferred means of pollution prevention, and are often easily implemented (for example, using empty meal, ready-to-eat (MRE) boxes as storage bins).

3–4. Recycling

Recycling is another excellent way to reduce the amount of SW requiring disposal on installations and in the field. The DLA (or its local equivalent) should determine what type of recycling program is used by the local municipality or host installation and should seek recycling support services. In most overseas deployment locations, shipping recyclable materials back to the United States is cost prohibitive, whereas participating in the local community recycling or Army installation program may be feasible.

3–5. Composting

a. General. Composting is a form of organic waste treatment that will reduce the volume of SW requiring disposal. The suitability of composting as a waste disposal method depends upon the amount of organic waste generated, susceptibility to vectors, available land and manpower, and duration of occupancy. There are various methods of composting that range in complexity in terms of labor and equipment requirements. Additional information is available from the USACHPPM Ground Water and Solid Waste Program Web site at <http://chppm-www.apgea.army.mil/gswsp/SolidWaste/index.htm>.

b. Approach. The supporting engineer unit (or waste contractor) should determine whether a composting program is operated by the local municipality or host installation and should participate if composting support services are available. Aerated (turned) windrow and in-vessel composting are not practical in most training and deployment settings due to the equipment and land space requirements.

3–6. Separation, storage, and collection

At the unit level, collection and storage of SW is the responsibility of the individual and is monitored by the FST.

a. Separation. Source separation should be used to remove recyclable, reusable, and marketable materials in order to reduce the quantity of waste requiring disposal. The best means of achieving appropriate segregation is by providing separate, labeled containers for different types of wastes. A less desirable option is to take wastes and recyclables to a consolidated segregation yard where assigned personnel manually separate the waste.

b. Storage. All SW should be placed in plastic bags, tied, and consolidated as quickly as possible at designated waste collection points. These collection points should employ closeable containers such as dumpsters or garbage cans with lids. Cardboard boxes should be broken down prior to placement in dumpsters to reduce volume. Waste collection points should be located at least 100 feet from dining facilities. Receptacles, dumpsters, and compactors used by dining establishments will also be cleaned according to the guidelines in TB MED 530. Before departing a field site, commanders should ensure no SW (including wire, sandbags, brass, and paper) remains in the training area.

c. Collection. Waste should be removed at least twice per week from collection points and daily from food service facilities. A contractor will often perform collection services, particularly if wastes are disposed in a municipal facility. The collection method will depend on the disposal method, which is a factor of unit size. Solid waste should be collected in a vehicle dedicated for that purpose. If a vehicle is converted for use in trash collection, this vehicle should have a low gate for easy access and a suitable cover, such as chicken wire or canvas, to keep trash from blowing off. Vehicles used to transport trash must be cleaned prior to use for other missions. For example, the truck must be cleaned and disinfected with a 200 milligrams per liter (mg/L) chorine solution prior to transporting foodstuffs.

3-7. Disposal

The primary options for SW disposal in the field are burial, burning, or backhauling. Within the United States, all SW generated during field exercises must be backhauled to garrison or picked up by contractors. During overseas training exercises, host nation requirements must be followed which normally require the same policies of backhauling or contract disposal. If incineration, burning, or landfilling is used during contingency operations, additional security measures must be taken to deter scavenging by local populations.

a. Incineration. In the absence of host nation support, the preferred method of SW disposal in the field is incineration (unless smoke and flames would compromise the tactical situation). This method should only be used for stays of a week or more. Corps of Engineer personnel should be consulted prior to construction or use of any incineration device. Open burning, to include barrel incinerators (figure 3-1), should only be used in emergency situations until approved incinerators can be obtained. The use of improper incinerators or burning methods can lead to significant environmental exposures to deployed troops. As a result, all burn operations should be conducted as far downwind as possible (at least 450 feet) from troop locations and living areas. Particular care must be taken to ensure no HW is incinerated—as explosions or toxic gases may result.

b. Burial. If burning or contract removal is not an option, SW must be buried. Soil types, rainfall, drinking water sources, and waste quantity are some of the factors to consider when using this waste disposal method. At a minimum, burial sites must be located at least 300 feet from any natural water source used for cooking or drinking such as a stream, lake, or well. The burial site should also be at least 100 feet from kitchens (or food consumption sites) to minimize problems with insects, rodents, and odor.

(1) *Landfilling.* Preexisting landfills should be used whenever possible. If an adequate landfill does not exist, the Corps of Engineers or a contractor may construct one. Care should be taken to ensure these landfills are maintained and operated properly, and permitted if required. Guidance for construction and operation of landfills is provided in technical manual (TM) 5-634, Title 40, Code of Federal Regulations, Part 258 (40 CFR 258), and United Facilities Criteria (UFC) 3-240-10A (formerly TM 5-814-5).

(2) *Tactical burial.* On the march, in bivouac, or in camps of less than 1-week duration, SW should be buried in pits or trenches. Pits are preferred for overnight halts. A pit 4 feet square and 4 feet deep is suitable for 1 day for a unit of 100 individuals (see figure 3-2). For stays greater than 2 days, a continuous trench is preferable since it can accommodate a large amount of garbage and allows for a daily coverage of earth as the trench is extended. The trench is first dug about 2 feet wide, 3 to 4 feet deep, and long enough to accommodate the garbage for the first day. As in the pit method, the trench is filled to not more than 1 foot from the top. The trench is extended as required, and the excavated dirt is used to cover and mound the garbage already deposited. This procedure is repeated daily or as often as garbage is dumped.

c. Destruction of classified materials. Army Regulation (AR) 380-5 addresses the destruction and disposal requirements for classified material. Classified material must be destroyed completely to prevent recognition or reconstruction of sensitive information. Approved destruction methods include crosscut shredding and burning.

d. Rations disposal. Coordinate with veterinary service personnel prior to disposal of unused government-purchased rations (for example, expired MREs). Veterinary personnel will provide specific disposal guidance such as burial, incineration, or release to local farmers for animal consumption.

e. Disposal of retrograde wastes. To prevent the introduction of foreign pests or disease into the United States, all garbage from retrograde cargo missions (flights or shipments originating from foreign countries) should be placed in leakproof containers and incinerated or sterilized according to U.S. Department of Agriculture clearance protocols. Following heat treatment, the waste material is safe for landfill or other disposal, except for feeding to animals. Landfills alone are not an acceptable means of disposing of garbage from foreign flights or vessels.

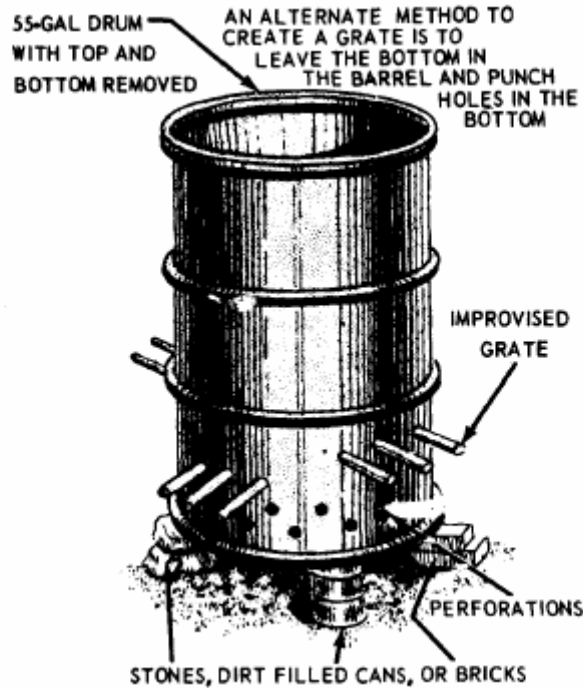


Figure 3-1. Barrel incinerator.

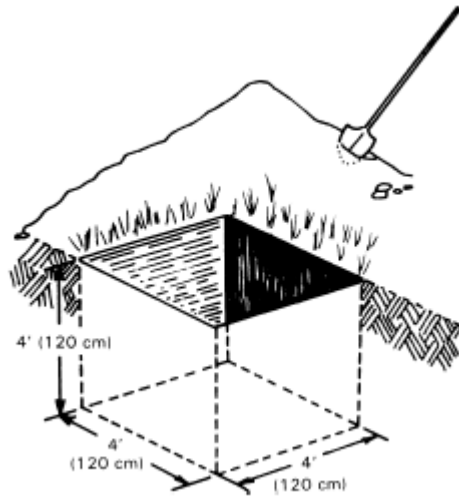


Figure 3-2. Garbage burial pit.

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CHAPTER 4

HAZARDOUS AND SPECIAL WASTE

4-1. Classification

a. Hazardous waste. Hazardous waste is a regulatory term for certain discarded materials that are potentially harmful to human health or the environment. Examples of common HWs found in field settings include used solvents, compressed gas cylinders, and contaminated soil from fuel spills. Subtitle C of the Resource Conservation and Recovery Act (published in 40 CFR 260-280) governs CONUS HW management and serves as the foundation for OCONUS standards.

b. Special waste. Special wastes are discarded materials that do not meet the criteria for classification as an HW, but still pose hazards to human health or the environment. Units must often manage special wastes separately from regular trash. Examples include used oil or antifreeze collected for recycling, alkaline batteries, and asbestos-containing materials.

4-2. Training

Commanders must ensure all personnel assigned duties involving actual or potential exposure to HW receive training according to AR 200-1. Personnel need only receive training in the areas that relate to their specific duties. The USACHPPM points of contact listed in paragraph 1-5 of this TB MED can provide assistance in satisfying these training requirements.

a. Content. Hazardous waste training must prepare personnel to safely perform their assigned duties and comply with applicable HW requirements. Training must be conducted by qualified trainers who have completed an instructor training program in the subject, or have comparable academic credentials or experience. Commanders may also approve computer-based programs to provide training. At a minimum, HW training must cover: site-specific safety and health hazards, proper waste management procedures, spill response and cleanup, personal protective measures, emergency procedures and equipment usage, and recordkeeping requirements.

b. Frequency. Personnel must receive initial training prior to assumption of HW handling duties. Refresher training for these employees must occur annually.

c. Documentation. Hazardous waste training records must include the following information: employee name, job title and description, description of type and amount of initial and refresher training, and proof of training (such as a course completion certificate). Supervisors must maintain training records for at least 3 years after termination of duty of these personnel.

4-3. Identification

Classification of hazardous and special waste is based on the harmful chemical or physical properties of the discarded items. A good rule of thumb is if a discarded item is HW in garrison, it will be HW in the field.

a. Criteria. The specific criteria used to identify HWs are found in 40 CFR 261. State regulations and FGS may add to these criteria. Generally, in order for an item to be considered

an HW, it must either be listed in 40 CFR 261 Subpart D or exhibit one or more of the following characteristics:

- (1) *Ignitability*. Liquids with flash points <140°F(60°C).
- (2) *Corrosivity*. Liquids with pH readings ≤ 2 or ≥ 12.5 .
- (3) *Reactivity*. Items capable of explosion or detonation, or that react violently with water.
- (4) *Toxicity*. Substances whose toxicity test results meet or exceed regulatory levels listed in Table 1 of 40 CFR 261.24.

b. Sources of information. Several sources of information exist that are helpful in determining the harmful characteristics of a material and whether or not it becomes a hazardous or special waste when discarded. Examples include:

(1) *Material Safety Data Sheets (MSDSs)*. Manufacturers create MSDSs for each hazardous material (HM) they produce. These data sheets provide information on the characteristics of specific materials such as flash point, pH, concentration, and toxicity. Many MSDSs also provide detailed disposal information. Manufacturers should provide copies of MSDSs with each shipment of HMs and/or make them available online.

(2) *Hazardous Materials Information Resource System (HMIRS)*. The HMIRS is a database containing MSDSs for military supply items (figure 4–1). The DLA maintains this system and allows users to search for product information by several means such as by nomenclature or National Stock Number (NSN). The database is accessible online at <http://www.dlis.dla.mil/hmirs/default.asp>

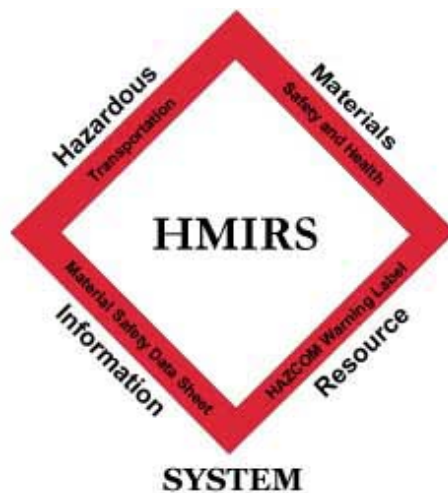


Figure 4–1. Hazardous Materials Information Resource System logo.

(3) *Military Item Disposal Instructions (MIDI)*. The MIDI database provides detailed disposal guidance for thousands of military items, including medical supplies. Like HMIRS, this system provides multiple search options. The MIDI, however, classifies each listed item as HW

or non-HW and provides specific disposal information. A CD-ROM version of the database is published annually and is available from the USACHPPM at phone 1–800–276–MIDI. The MIDI database is also available online at <http://chppm-www.apgea.army.mil/newmidi/>.

(4) *USACHPPM*. Additional technical guidance is available from the USACHPPM Hazardous and Medical Waste Program at phone 410–436–3651/DSN 584–3651 or electronically at <http://chppm-www.apgea.army.mil/hmwp/>.

4–4. Collection

The keys to proper waste collection are use of PPE, segregation, containerization, and marking.

a. PPE. Evaluate the need for PPE before handling any HM/HW. Safety equipment such as goggles, gloves, and protective footwear may be necessary to protect handlers from injury or harmful exposure. When selecting PPE, consult MSDSs and use professional judgment regarding the hazardous properties of the waste. It is important to note that PPE will not protect personnel from external gamma radiation exposure. Workers should clean or dispose of contaminated PPE as soon as possible after use. Remember to characterize contaminated PPE using the criteria described in paragraph 4–3 to determine if this equipment must be managed as an HW.

b. Segregation. Manage HW separately from trash and other solid wastes—mixing HW with non-HW violates environmental regulations, complicates turn-in procedures, increases disposal costs, increases potential health risks, and could result in dangerous chemical reactions.

c. Containerization. The best choice for containers is often the original container the material was shipped in prior to it being rendered a waste. If the original container is not available or the waste volume exceeds the capacity of the original receptacle, use any container that is in good condition (free from severe rusting, bulging, dents, or structural defects) and compatible with the waste. If reusing a container, remove or spray paint over markings that do not apply to the waste inside. Containers used to collect HW must also be kept closed when not adding or removing waste. When filling a container with liquid hazardous or special waste, ensure adequate headspace remains to allow for expansion of the material (about 3 inches in a 55-gallon drum, 2 inches in a 5-gallon can, and 1 inch in a 1-gallon can). Funnels or other flow control devices should be used to minimize spills when transferring liquids to or from containers. However, funnels must be removed and containers closed after the transfer is complete. Additionally, ignitable wastes should only be collected in grounded metal containers, and corrosive wastes should only be collected in plastic or plastic-lined containers.

d. Marking. Mark each container of hazardous or special waste with words that identify the contents, such as “Used Oil” or “Contaminated Soil” (see figure 4–2). Labels or words that identify the hazards of the material (such as “Ignitable”) and the name of the generating unit (such as A/4/13 INF) should also be placed on the outside of the container. Unless required by local policy, dates should not be placed on HW containers until the waste exceeds 55 gallons or until the container is moved to a consolidated storage area.

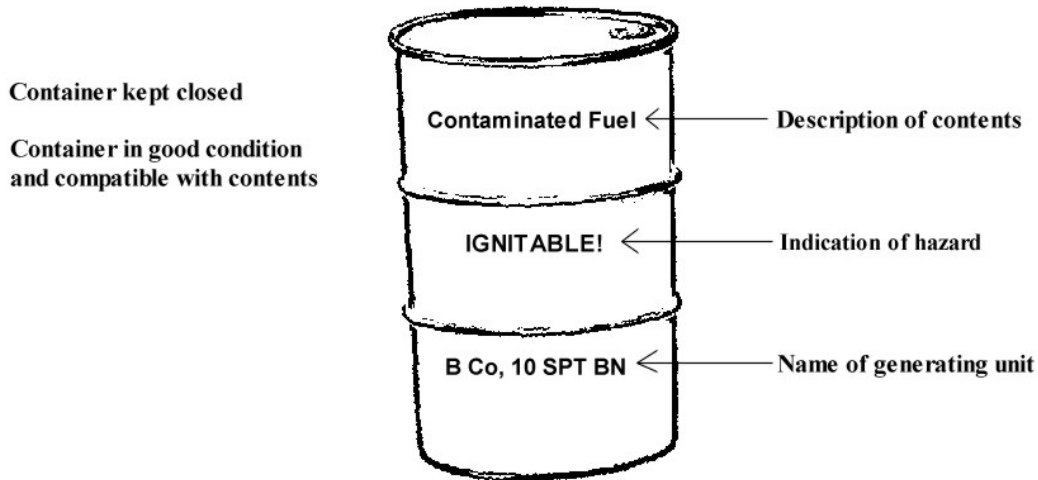


Figure 4–2. Container standards for hazardous waste collection points.

4–5. Storage

A collection site is considered a storage area when it contains more than 55 gallons of HW. In general, waste should not be stored longer than 1 year in an HW storage area, and should follow the guidelines presented in TM 38-410. In the United States, permits are normally required to store wastes onsite longer than 90 days.

a. Location. The logistics staff (S-4/G-4/J-4) should identify locations for waste consolidation and storage during the pre-deployment or planning phase of an operation. Safety and security are two important factors to consider when choosing a site. Planners must realize intentional attacks, as well as accidents during normal handling, could lead to harmful chemical releases or explosions. As a result, units must consider the sensitivity and vulnerability of areas adjacent to storage locations (such as billeting, work areas, and ammunition supply points). Whenever possible, locate waste storage areas at least 300 feet downslope and downwind from troop billeting and at least 100 feet from wells, surface water, and base camp boundaries. Provide protection from the sun and rain whenever possible, and avoid storing HW in low lying areas that may flood during heavy rains. Storage site managers should also use control measures such as signage (for example, "Danger: Unauthorized Personnel Keep Out") and fencing to restrict access to the sites. Warning signs should be written in English and any other language predominant in the area.

b. Secondary containment. Provide secondary containment (any physical barrier used to prevent the spread of spills) for all waste containers. Common examples of secondary containment include plastic tubs, sumps, concrete pads with curbs to prevent runoff, spill-control pallets, and plastic-lined pits or trenches. Another option is to place containers of waste on a large plastic tarp and stack filled sand bags around the perimeter. To maximize containment, the edges of the tarp should be draped over the top of the sand bags and folded back into the storage area. Whatever method is used, secondary containment should have sufficient capacity to

contain 10 percent of the total volume or 100 percent of the volume of the largest container, whichever is greater. Overhead cover (such as a tarp or a roof) should also be used to prevent rainwater from collecting in secondary containment devices.

c. Segregation. Store waste containers in a manner that will prevent contact of incompatible wastes in the event of a leak or spill. Consult MSDSs and TM 38-410 for detailed information concerning chemical compatibilities of a substance. At a minimum, storage areas should segregate waste containers into five sections: reactives, ignitables (flammables), corrosives, oxidizers, and toxics. Further segregation may be required based on the compatibility of individual materials (for example, acids should be separated from bases). Each storage section should be separated by a distance of 6 feet or a physical barrier (such as a berm) to prevent incompatible wastes from mixing and producing a harmful chemical reaction or toxic vapors. In areas containing ignitable or reactive wastes, “No Smoking” signs should be prominently displayed, and all metal containers should be grounded.

d. Containers. Containers in waste storage areas must comply with the marking requirements cited in paragraph 4-4d of this chapter. In addition, HW containers must be marked with the date of arrival at the storage area and the words “Hazardous Waste.” Containers should be stored so labels are facing out to allow for easy inspection. All waste at HW storage areas should also be stored in containers approved for HM transport. These containers will normally bear United Nations (UN) specification markings, which can be interpreted by someone certified in HM transport. An example of a UN specification marking is shown in figure 4-3. Ordering information for common UN-approved containers can be found in table 8-1.



Figure 4-3. Sample United Nations specification marking.

e. Emergency preparedness. Each HW storage area must contain appropriate equipment (such as a communication/alarm system, properly rated fire extinguishers, nonsparking shovels, gloves, plastic bags, PPE, potable water for eye washing and decontamination, and spill kits) to respond to onsite emergencies. See table 8-1 for supply ordering information. Supervisors must develop a written emergency response plan that describes the proper use and location of this equipment, and details employee responsibilities during an emergency. A written copy of this plan must be maintained at each storage area.

f. Inspections. Storage area managers must inspect their waste storage areas weekly to ensure all requirements described in paragraphs 4-5a through 4-5g of this chapter are being met and containers are in good condition. Inspectors must take immediate action to correct any

deficiencies noted. Managers must also maintain records of weekly inspections. At a minimum, these records must include the date and time of inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions. See figure 4-4 for a sample format that may be used to record weekly inspections.

g. Recordkeeping. In addition to weekly inspection reports, each storage area manager must maintain a log of the types and quantities of waste received, the dates of arrival at and departure from the storage area, and the names of the units that generated the waste. Maintain all HW management records for at least 3 years.

4-6. Transportation

Hazardous and special waste shipments must comply with all HM transportation requirements.

a. Packaging. Package, mark, and label all HW shipments according to 49 CFR 171-185. Additionally, HW transported by military aircraft must comply with the Air Force Manual (AFMAN) 24-204(I).

b. Documentation. Some form of documentation must accompany all shipments of hazardous and special waste. When transporting HW over public roads in the United States, a U.S. Environmental Protection Agency or state-approved HW manifest must accompany each shipment. For all other waste shipments (to include HW shipments that remain within or along the border of a military installation), acceptable types of documentation include DD Form 836 (Dangerous Goods Shipping Paper/Declaration and Emergency Response Information for Hazardous Materials Transported by Government Vehicles/Containers or Vessel), DD Form 1348-1A (Issue Release/Receipt Document), DD Form 1348-2 (Issue Release/Receipt Document with Address Label), DA Form 3161 (Request for Issue or Turn-in), a Bill of Lading, or applicable host nation form.

c. Vehicles. The preferred means of transporting hazardous and special wastes is by highway or maritime vessel. Privately-owned vehicles must not be used to transport HMs of any kind, to include HW. Vehicles used to deliver HMs to units may also be used to transport or retrograde wastes. These vehicles are subject to the placarding requirements described in 49 CFR 172 (or host nation requirements) and should contain spill response equipment. Vehicles used to transport radioactive wastes must be surveyed by a Radiation Safety Officer or nuclear, biological, and chemical (NBC) personnel after each use to assess any residual contamination. The vehicle may not be used for transporting nonradioactive materials until cleared by the Radiation Safety Officer or NBC personnel.

d. Training. Personnel that sign HM shipping documents, to include HW manifests, must successfully complete an approved certification course listed in DOD 4500.9-R, Part II, Chapter 204, Section D. Refresher training for certifiers is required every 24 months. In addition, all drivers of HMs must receive training according to 49 CFR 177.

4-7. Disposal

Logistics planners must determine the means of HW disposal prior to deployment by contacting the supporting DRMS. Decisions not to use the DRMS must receive concurrence from the component chain of command to ensure contracts and disposal criteria are at least as protective

Date _____ Time _____ Location _____
 Inspector _____ Site POC _____

General

- | Yes | No* | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Location <ul style="list-style-type: none"> - Access controlled - Located 300 feet from living areas and 100 feet from wells, surface water, and camp perimeter |
| <input type="checkbox"/> | <input type="checkbox"/> | Area posted with appropriate hazard and cautionary signs |
| <input type="checkbox"/> | <input type="checkbox"/> | Area free of spills |
| <input type="checkbox"/> | <input type="checkbox"/> | Secondary containment devices free of deterioration, liquid, and debris |
| <input type="checkbox"/> | <input type="checkbox"/> | Emergency equipment present and in proper operating condition (e.g., PPE, communication system, fire extinguishers, shovels, spill kits, eyewash) |
| <input type="checkbox"/> | <input type="checkbox"/> | Current site standing operating procedure and emergency response plan present |

Containers

- | Yes | No* | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Waste stored in approved containers suitable for transport (e.g., United Nations-approved containers) |
| <input type="checkbox"/> | <input type="checkbox"/> | All containers clearly labeled and dated |
| <input type="checkbox"/> | <input type="checkbox"/> | No waste containers stored longer than 1 year (or 90 days CONUS) |
| <input type="checkbox"/> | <input type="checkbox"/> | Containers compatible with waste being stored |
| <input type="checkbox"/> | <input type="checkbox"/> | All containers closed except when adding or removing waste |
| <input type="checkbox"/> | <input type="checkbox"/> | Adequate separation of incompatible waste |
| <input type="checkbox"/> | <input type="checkbox"/> | Ignitable and reactive waste isolated from sources of ignition, and "No Smoking" sign posted |
| <input type="checkbox"/> | <input type="checkbox"/> | Ignitable waste containers grounded |
| <input type="checkbox"/> | <input type="checkbox"/> | Adequate aisle space between rows of containers/pallets (approx 3 feet) |

*Describe corrective action needed:

Date corrective action completed: _____

Date _____ Time _____

Signature of Site Coordinator (only required when a corrective action is completed)

Figure 4-4. Sample weekly inspection record format for hazardous waste storage areas.

as criteria used by the DLA. If local contractors cannot meet the DLA criteria in DOD 4160.21-M, wastes must be backhauled to a DRMS facility. Units must never incinerate or bury any HW unless explicitly approved by both United States and host nation authorities.

4–8. Additional guidance on common field wastes

a. Batteries. Used lead-acid, nickel-cadmium, mercury, lithium, silver, and magnesium batteries usually meet the criteria for classification as HW, and are subject to all of the HW management requirements discussed above. If destined for recycling, however, batteries need only be collected in a manner that provides protection against possible leaks (such as on a spill pallet). It is also important to note that magnesium batteries can emit hydrogen gas and, therefore, should not be collected in air-tight containers. Used alkaline batteries are not HW and may be landfilled with regular trash. If trash is burned locally, however, alkaline batteries should be collected and disposed separately to prevent injury from batteries bursting in the fire.

b. Aerosol cans. Intact aerosol cans meet the criteria for reactive HW. Local policy may authorize the use of puncturing devices to render these wastes nonhazardous; however, units must ensure any remaining substances in the cans do not meet the requirements for classification as an HW. Once punctured, most cans may be recycled for scrap metal.

c. Light bulbs. Spent lamps (including fluorescent, high intensity discharge, neon, mercury vapor, sodium vapor, metal halide, and even incandescent) and lamp ballasts contain heavy metals and may meet the criteria for classification as toxic HW. Although most commonly used lamps contain extremely low levels of toxic substances, discarded bulbs can still pose environmental and health hazards when landfilled in large quantities. The best practice is to collect all spent lamps, especially mercury-containing bulbs (like fluorescent), in containers that will help prevent breakage (such as the cardboard sleeve or box in which replacement bulbs arrived), then turn-in for recycling. If lamps are broken, ventilate the area where breakage occurred, then sweep up the glass and metal and place in a sealed plastic bag. Broken mercury-containing bulbs should then be disposed as HW. Discarded light ballasts should also be recycled or evaluated for HW criteria.

d. Contaminated soil. Fuel spills are one of the most common sources of HW in field settings. Secondary containment (such as drip pans, pillows, absorbent, concrete pads, or tarps) is required for all fueling locations. Secondary containment should also be provided for all fuel stands and space heater overflow lines. When spills occur, personnel should immediately take action to protect themselves and prevent the spread of the spill. Contaminated soil or absorbent should then be shoveled into leakproof containers (such as plastic bags or drums) and transported to a designated soil collection facility or HW storage area. Contractor or engineer support may be required for large spills (defined in local policy). If approved by local authorities, biological remediation (for example, “land farms”) may be used for onsite treatment of petroleum, oil and lubricant (POL)-contaminated soil. This process involves mixing water with the contaminated soil and allowing bacteria to naturally degrade the POL products. Land farming is best suited for isolated areas located in hot, dry climates, and must be supervised by someone trained in the proper construction and operation of land farm systems.

e. Pesticides. Carefully adhere to disposal instructions printed on pesticide container labels or package inserts. Many waste pesticides meet the criteria for classification as HW. The best way to minimize pesticide waste is to carefully plan the amount needed prior to mixing, so all of the product will be consumed during use. Additional disposal guidance can be found in Armed Forces Pesticide Management Board (AFPMB) Technical Guide 21.

f. Flameless ration heaters (FRHs). When exposed to water, FRHs produce heat and hydrogen gas. In small numbers, these hazards are not great enough to warrant classification or management as HW, and the heaters may be disposed of with regular trash. Bulk quantities of unused FRHs (not issued to personnel and not packaged with MREs), however, may meet the criteria for reactivity. The best management practice is to collect unused FRHs for future use/reissue or instruct personnel to activate prior to disposal in the regular trash.

g. Vehicle and equipment maintenance wastes. Maintenance operations should be conducted on a hardstand surface, tarp, or plastic liner. Drained fluids must either be returned to the vehicle or placed in a labeled waste container for recycling or disposal as an HW. Used oil cannot be used for dust suppression or road treatment. Waste solvents, grease, dry sweep, and used rags must be evaluated for classification as an HW. Generally, used rags can be laundered and reused. Oil, fuel, and other filters (not including air filters) must also be segregated from regular trash and collected for recycling or HW disposal. Used oil filters should be gravity-drained, with both the liquid contents and the drained filter collected separately in metal drums. Drained oil filters (nonterne-plated) may be disposed of in the regular trash or recycled as scrap metal.

h. Weapon cleaning waste. Cleaner, lubricant, and preservative (CLP) manufactured since 1994 (for example, Break-Free[®]) is nonhazardous, and rags, towels, and swabs containing CLP can be disposed of as regular trash. As an exception, patches used to clean weapon bores after firing may contain high levels of lead and should be collected as HW. Other types of solvents (and pre-1994 formulations of CLP) must also be evaluated for HW criteria and may be recyclable. Whatever solvent or CLP is used, ensure personnel use only the amount needed to maintain the weapon to TM specifications. (Break-Free[®] is a registered trademark of Armor Holdings, Inc., Jacksonville, Florida.)

i. Paints. Partially used paint containers can often be reissued by the HM control center to other units. Otherwise, discarded oil-based paints and paint solvents frequently meet the criteria for ignitable HW. Latex (water-based) paints manufactured after 1991 do not become HW when discarded, and may be disposed of as regular trash. Empty paint cans may be recycled as scrap metal.

j. FST wastes. Several unit FST supplies become HW when discarded. These include mercury thermometers and pesticides. Manage granular calcium hypochlorite as HW (even though some formulations may not meet the criteria for HW) because of the dangers posed by its highly corrosive and oxidizing nature. Calcium hypochlorite should not be burned with regular trash nor buried in landfills.

k. Asbestos. Seal all asbestos-containing waste (such as floor tiles and brake shoes) in air-tight containers. All asbestos abatement activities should be performed by approved contractors or other certified personnel. Asbestos-containing material should be wetted, then double-bagged, and each bag sealed with duct tape. Label all containers of asbestos waste with the following:

"DANGER - CONTAINS ASBESTOS FIBERS – AVOID CREATING DUST - CANCER AND LUNG DISEASE HAZARD." Disposal will normally occur in an approved landfill.

l. Range residues and waste munitions. All range residues (for example, used and unused ammunition, ammo boxes, and spent casings) should be returned to the ammunition supply point where it will be segregated for either HW disposal or recycling.

m. Radioactive wastes. Radioactive wastes should only be handled by designated radiation safety or NBC personnel and managed according to AR 700-48. DLA/DRMS does not manage radioactive waste. Don disposable gloves before handling small quantities of suspected low-level radioactive items (such as damaged tritium compasses, fire control azimuths, or chemical agent monitors), and double bag in plastic bags. Ensure the package is marked as "SUSPECTED RADIOACTIVE WASTE," and the items are not removed from the bags until the package reaches its ultimate destination. Maintain a strict chain of custody for these items during transport. DD Form 1911 (Materiel Courier Receipt) may be used to document chain of custody. Record the names and units of any personnel that may have come into contact with the contaminated items and the dates of exposure. Provide this information to radiation safety and medical personnel.

n. NBC wastes. Turn in used protective mask filters, protective garments, personal decontamination kits, and NBC detectors to the unit NBC representative for proper disposal. All items suspected of chemical or biological contamination should be sealed in leakproof bags or drums and disposed as HW. Record the names and units of any personnel that may have come into contact with the contaminated items and the dates of exposure. Provide this information to radiation safety and medical personnel. Bulk decontamination agents, such as super tropical bleach and decontaminant solution 2, are extremely corrosive and must be managed as HW when discarded. For management of medical NBC defense materiel (MNBCDM), see chapter 5.

CHAPTER 5

MEDICAL WASTE

5-1. Classification

a. Regulated medical waste (RMW) is a term that describes wastes generated by medical, veterinary, and dental treatment facilities in the diagnosis, treatment, research, or immunization of human beings or animals which are potentially capable of causing disease, and may pose a risk to either individuals or community health if not handled or treated properly. These types of wastes are defined in United States Army Medical Command (MEDCOM) Regulation 40-35 and include: cultures and stocks of infectious agents; pathological waste (tissues, organs, body parts, teeth); human blood and blood products; contaminated animal carcasses, body parts, and bedding used in animal research; isolation waste from patient rooms; sharps (syringes, scalpels, blades); and human body fluids (semen, vaginal secretions, cerebrospinal fluids, pleural fluids).

b. There may be diseases unique to a specific theater. The theater surgeon should designate whether or not nonbloody wastes from these diseases require segregation and management as RMW. The decision is based on the nature of the disease, prevalence, the method of transmission, and other risks.

c. Whole bodies are not considered RMW. Quartermaster units will manage human bodies according to Joint Publication (JP) 4-06.

d. Animal body parts, carcasses, and bedding (not contaminated by medical research) are not considered RMW, and may be incinerated or landfilled.

e. Personnel handling blood-soaked clothing or personal equipment (such as body armor) should adhere to the handling guidance provided in paragraph 5-2a below. To render items non-infectious, wash blood-soaked items with soap and hot water. Adhere to the cleaning guidance provided on clothing/equipment labels, or consult with Quartermaster personnel for detailed laundering instructions. Equipment that remains stained after laundering should be returned through supply channels for either turn-in or exchange. Logistics personnel will evaluate item serviceability and make the final decision regarding disposition of government-issued clothing and equipment.

5-2. Handling

a. Use standard precautions when handling wastes generated as a result of treating patients or animals. Personal protective equipment includes protective gloves (disposable latex, butyl rubber, or other types impermeable to blood), masks/safety goggles/safety glasses, or other equipment that will prevent personnel from contracting communicable illnesses from patients or their wastes. Any exposed skin should be washed with soap and water.

b. Personnel should wear both skin protection and respiratory protection when burning or incinerating medical waste, and should avoid standing in the resulting smoke plume. **BURNING RMW OR ANY OTHER WASTE IS NOT AUTHORIZED FOR CONUS FIELD TRAINING EXERCISES.** An air-purifying respirator (cartridge or canister) with a high-efficiency

particulate air (HEPA) filter is recommended (see figure 5–1). Commercial respirators approved by the National Institute for Occupational Safety and Health with a P100 or N100 rating are preferred. The M40 protective mask should only be used until commercial respirators are obtained. Paper surgical masks do not protect from hazards inherent in the burning of waste and should not be substituted for an air-purifying respirator. Respiratory protection is only needed for those personnel remaining in the immediate vicinity of the burning process. Personnel tasked to incinerate medical waste must be medically cleared to wear a respirator, properly fit-tested on an approved respirator, and enrolled in a medical surveillance program.

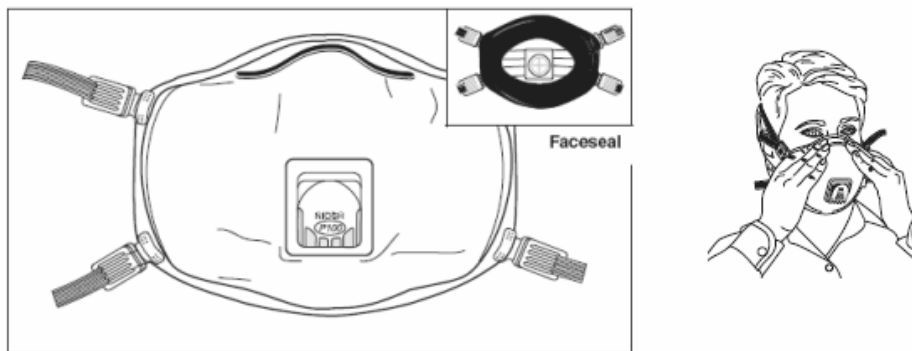


Figure 5–1. HEPA cartridge respirator.

c. Consider vaccinating all employees that handle RMW against the Hepatitis B virus. This immunization is mandatory for U.S. medical personnel.

5–3. Collection, segregation, and storage

a. Contact the supporting Medical Logistics unit or Class VIII manager for medical waste storage containers. Collect RMW at the point of generation in red bags (or other color specified for the theater). Sharps will be collected in puncture-resistant, leak-resistant, and uniquely colored or marked containers. If proper sharps containers are not available, use any rigid plastic or metal containers (such as coffee cans or plastic drink bottles) for collection. These nonstandard containers should be placed into red bags or proper sharps containers as soon as possible for disposal.

b. All bags or receptacles used to segregate, transport, or store RMW will be clearly marked with the universal biohazard symbol and the word “BIOHAZARD” in English (see figure 5–2) and any other language suitable for the region.



Figure 5–2. Universal biohazard symbol.

c. Never mix RMW with regular trash or HW, unless required for the burning process. Medical personnel should also take care to ensure clothing and bandages placed into red bags do not contain ammunition or other unexploded ordnance.

d. Store RMW in secure, ventilated areas that offer protection from the sun, rain, scavengers, and pests. Collection in a covered cargo trailer facilitates the transport of the waste from the medical facility.

e. Medical waste (other than sharps containers) should not be stored above 40°F (4.4°C) for longer than 5 days.

5–4. Transporting regulated medical waste in the field environment

Regulated medical waste is considered an HM for transportation purposes and must comply with the requirements of 49 CFR 100-185 and DOD 4500.9-R. Additionally, RMW transported by military aircraft must comply with the AFMAN 24-204(I).

a. Transport RMW in military, government, or contractor vehicles. Use of privately owned vehicles is not authorized.

b. The RMW must be secured to prevent excessive movement and will not be transported alongside items intended for consumption.

c. A spill kit must be readily available to decontaminate any surfaces in the event of a leak or spill and shall include: appropriate PPE, a disinfectant, absorbent material, and equipment used to gather spill residues. The kit may be assembled at the local level or purchased commercially.

d. If RMW must be transported across public roads, the driver must receive training according to 49 CFR 177.

e. Vehicles used to transport RMW must be cleaned and disinfected prior to use for any other purpose.

5–5. Treatment and disposal

On installations in the United States and overseas, commercial contractors will be used for RMW disposal (DLA/DRMS does not manage medical waste). All RMW generated during field exercises should be backhauled to garrison. During contingency operations, RMW may be

incinerated, burned, sterilized, or buried according to guidance provided in the combatant command's operations order. Incineration and burn activities should be conducted as far downwind as possible (at least 450 feet) from troop locations and living areas.

a. Incineration. Use of a commercial incinerator capable of subjecting the waste to a minimum burn temperature of 1500°F (816°C) for at least 1 hour is the preferred method of destruction. Incinerator operators must be trained on proper operating and maintenance procedures, safety measures (to include PPE use), emergency response, and local environmental requirements. Incinerator bottom ash and air pollution control ash (if applicable) should be tested for HW properties prior to disposal in a solid waste landfill. Aerosol cans, gas cylinders, and batteries should never be incinerated. Seek approval from the local commander prior to operating field-expedient devices such as the inclined-plane incinerator with vapor burner (described in FM 4-25.12).

b. Burning in barrels. Burning medical waste in barrels or pits is permissible provided these burns are approved by appropriate command personnel and local officials, and conform to regulatory policies for the specified region. Whenever possible, avoid burning when wind and other conditions could cause the resulting smoke to blow in the direction of personnel at the base camp. Only personnel involved in the actual burning need to wear respiratory protection as described in paragraph 5-2b. To ignite the burn, mix one part gasoline with five parts JP-8. Use a stick or pole to light the fuel from a distance of at least 3 feet. Mixing medical waste with regular solid waste (approximately 50/50 mixture) will help ensure the hottest and cleanest burn possible. The remaining ash may be buried in a solid waste landfill. Aerosol cans, gas cylinders, and batteries should never be burned.

c. Sterilization. Steam sterilization is another alternative to treatment of medical waste. Ensure the waste is secured in autoclave bags (regular plastic bags may melt) prior to placement in the sterilizer. Autoclave indicator tape, if available, will demonstrate when sterilization is complete. Guidelines for minimum operational temperatures and detention times are: 250°F for 90 minutes at 15 pounds per square inch (psi) gauge pressure, 272°F for 45 minutes at 27 psi gauge pressure, or 320°F for 16 minutes at 80 psi gauge pressure. After the RMW is sterilized and cooled, the waste may be managed as general trash. Ensure care is taken when handling the waste to minimize needle sticks. **STERILIZERS USED TO AUTOCLAVE MEDICAL WASTE MUST NEVER BE USED TO STERILIZE OTHER MEDICAL ITEMS** (such as medical instruments or dressings). Permanently and indelibly mark medical waste incinerators as “For Medical Waste Only—Do Not Use for Sterilization” or words to that effect. Have a contingency plan in place to manage waste that was intended for sterilization if the steam sterilizer becomes nonfunctional.

d. Retrograding. Retrograding waste back to the rear where facilities are available may be feasible if burning, incineration, or sterilization is not possible. International agreements govern the retrograde of medical waste, and any such movement must be coordinated through the combatant command.

e. Burial. The last resort is burying untreated medical waste in a sanitary landfill. This method should be employed only during contingency operations in areas with low water tables. Care must be taken to bury RMW below the scavenger depth of 8 feet. A layer of lime may be

placed over the waste prior to burial to accelerate decomposition and provide a measure of chemical disinfection. Because the Army will most likely have to retrieve this waste later, medical waste burial sites must be marked and grid locations reported through the chain of command.

f. Alternative technologies. Alternative technologies may also be used to treat and dispose of RMW. If connected to a domestic wastewater treatment plant, bulk blood or blood products may be poured into clinical sinks. See table 5–1 for more information.

Table 5–1
Treatment and disposal methods for regulated medical waste

Type of RMW	Method of treatment	Method of disposal
Microbiological	Steam sterilization ¹	Municipal landfill
	Chemical disinfection	Municipal landfill
	Incineration	Municipal landfill
Pathological	Incineration ²	Municipal landfill
	Cremation ²	Burial
	Chemical sterilization ³	Domestic wastewater treatment plant
	Steam sterilization ³	Domestic wastewater treatment plant
Bulk blood & suction canister waste	Steam sterilization ⁴	Domestic wastewater treatment plant
	Incineration ⁴	Municipal landfill
Sharps and sharps containers	Steam sterilization	Municipal landfill
	Incineration	Municipal landfill

Notes

¹ Preferred method for cultures and stocks because they can be treated at point of generation.

² Anatomical pathology waste (that is, large body parts) must be treated either by incineration or cremation prior to disposal.

³ This only applies to placentas, small organs and small body parts that may be steam sterilized or chemically sterilized, ground, and discharged to a domestic wastewater treatment plant.

⁴ Bulk blood or suction canister waste known to be infectious must be treated by incineration or steam sterilization before disposal.

5–6. Disposal of drugs

Consult the most recent edition of Supply Bulletin 8-75-11, Medical Materiel Quality Control (MMQC) messages, and the MIDI database for guidance on pharmaceutical disposal. Drugs that cannot be returned to the manufacturer, and that meet the criteria for HW, must be managed according to chapter 4 of this TB MED. If a waste determination cannot be made with local knowledge, contact the USACHPPM at 1–800–276–MIDI.

a. Immunizations. The United States Army Medical Materiel Agency frequently publishes disposal instructions for common immunizations in MMQC messages. In the absence of more

specific guidance, collect discarded vaccines and other immunizations in sharps containers and incinerate.

b. Controlled substances. Special care must be taken to maintain accountability of controlled substances during disposal. Disposal guidance for these items is provided in Defense Logistics Agency Regulation (DLAR) 4145.11. Many controlled substances, such as morphine, may be safely disposed by flushing into a sanitary sewer.

c. Chemotherapy wastes. Chemotherapy (also known as cytotoxic or antineoplastic) wastes must be incinerated in special high-temperature incinerators capable of achieving HW treatment standards. These wastes must never be buried.

d. MNBCDM. Follow MIDI guidance for the disposal of MNBCDM waste. Many of these items can be managed as RMW or solid waste. Some MNBCDM wastes that require special disposal considerations include: atropine (should be incinerated to safely destroy auto-injectors), diazepam (controlled substance), and pyridostigmine bromide tablets (should be managed as a listed HW due to acute toxicity). Figure 5–3 displays a common source of MNBCDM waste.

Nerve Agent Antidote Kit, MARK I

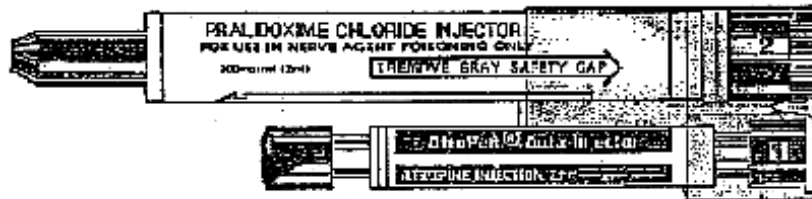


Figure 5–3. Nerve agent antidote kit with atropine injector.

CHAPTER 6

HUMAN WASTE

6-1. Background

It is imperative to use proper human waste disposal to prevent disease during contingency operations and training exercises. A camp or bivouac site without proper waste disposal methods can quickly become an ideal breeding ground for flies, rats, and other vermin and may result in disease among Soldiers. There are several methods available for human waste disposal; however, it is important to do so properly based on local, state, Federal, and host nation regulatory requirements.

6-2. Types of latrines

a. Chemical. Chemical latrines are the preferred means of human waste disposal during field training exercises. Logistics personnel can help facilitate the acquisition of chemical latrines and ensure maintenance and upkeep is dictated in the contract. It is essential these latrines are cleaned daily and the contents are pumped out for disposal in an Army-approved wastewater system (ideally, a sanitary sewer). The frequency of emptying is determined by the demand for use of the device. During contingency operations, engineer personnel may construct and operate a sewage lagoon for disposal of chemical latrine waste.

b. Containerized. The containerized latrine system, normally a component of Force Provider units, consists of six privacy stalls with low-water flush toilets, a trough urinal, two waste collection tanks (urinal and toilet waste are stored in separate tanks), two sinks with running hot and cold water, a 6-gallon water heater, mirrors, and dispensers for toilet paper, paper towels and soap. An Environmental Control Unit installed in the rear wall regulates internal temperature, and ventilation systems installed in the front wall and ceiling reduce odor. The containerized latrine system provides a private latrine facility with increased sanitation for 150 Soldiers. Containerized latrines are the preferred means of human waste disposal during contingency operations.

c. Improvised. The types of improvised latrines listed below can be used for field use. Generally, the use of improvised latrines in the United States is prohibited. Information on the proper construct and use of these devices can be found in FM 4-25.12.

- (1) Cat-hole latrine.
- (2) Burn out latrine.
- (3) Straddle trench latrine.
- (4) Deep pit latrine.
- (5) Mound latrine.
- (6) Pail latrine.
- (7) Urinal pipes.
- (8) Urinal trough.

6–3. Considerations

There are several aspects to bear in mind when considering the use of field latrines. Latrines should be constructed to prevent the contamination of food and water to ensure the health of the Soldiers.

a. Location. Location of field latrines can play an important role in the prevention of disease. The following aspects must be considered:

(1) Locate latrines at least 300 feet downwind and downhill from unit food service facilities and at least 100 feet from any unit ground-water source.

(2) Do not dig latrines to the ground-water level or in places where pit contents may drain into water sources.

(3) Build latrines at least 100 feet from billeting but within a reasonable distance for easy access for troops.

(4) Dig a drainage ditch around the edges of the latrine to keep out rainwater and other surface water.

b. Number of latrines to be used. For planning purposes, the number of latrines should be based on 1 toilet and urinal per 25 male Soldiers (4 percent), or 1 toilet per 17 female Soldiers (6 percent).

c. Sanitation. The latrines should be cleaned daily to help prevent the spread of disease. An adequate supply of toilet paper should be stocked and planned for use in the latrines. In addition, a handwashing device should be installed outside of each latrine and should be easy to clean and maintain. Soldiers should be educated on proper handwashing procedures by their unit FST to reduce the threat of disease.

d. Safety. Safety aspects should be considered when planning for the use of field latrines. Ensure latrines are accessible both night and day. Also, when conducting maintenance procedures or the burning of waste for burnout latrines, use the proper PPE. Preventive medicine personnel should be consulted on the particular safety aspects of the method used. For burnout latrines, highly volatile fuels such as JP-4 should not be used because of its explosive nature.

e. Regulatory requirements. Regulatory requirements for local, state, Federal, and host nations often differ and change periodically. Some CONUS military bases are located across more than one state and have to abide by the laws of several states. Commanders should consult with their respective supporting preventive medicine personnel or garrison environmental authorities to ensure compliance with these laws.

f. Closeout of latrines. When a latrine has been filled to within 1 foot of the surface, or when it is to be abandoned, it must be closed. The contents of the pit, the side walls, and the ground surface (to a distance of 2 feet from the side walls) should be sprayed with an approved insecticide. The pit is then filled to ground level with successive, 3-inch layers of earth. Each layer is packed down and its surface is sprayed with a DOD-approved insecticide before the next layer is added. The latrine pit is then mounded over with at least 1 foot of compacted earth. The purpose of this method of closing is to prevent emergence of flies that may hatch in the closed latrine. The location of the latrine should then be plainly marked with a “CLOSED LATRINE” sign and dated, provided the tactical situation permits (see figure 6–1).

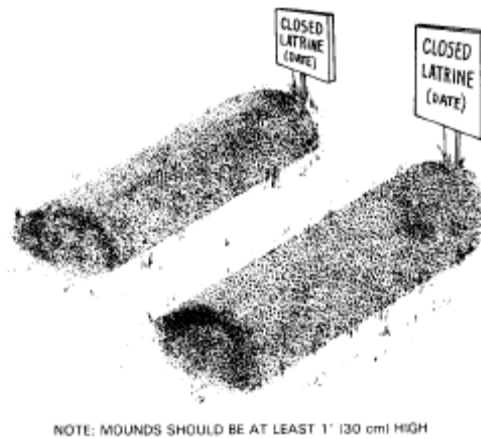


Figure 6–1. Closed straddle trench latrines.

6–4. Relief on the move

Relief of bodily functions while a unit is on the move will require prior planning to prevent transmission of disease and ensure human waste is not haphazardly disposed. Commercial products are available that can be used to meet the demand for units on the move. The products include plastic urinals that can be used by both genders for urination. There are also portable latrines that will allow individuals to relieve themselves in a bag containing a matrix that solidifies both urine and feces. These bags can then be disposed as solid waste. Table 6–1 provides NSNs for several portable latrine devices.

**Table 6–1
Portable latrine devices**

Name	NSN
Urinal, portable, female	8530-01-470-2805
Urinal bag, disposable	4510-01-379-0177
Portable latrine bag (for solid waste)	4510-01-379-1341
Portable restroom kit (for liquid and solid wastes)	4510-01-379-0190
Portable commode	4510-01-423-0100 and 4510-01-382-4289

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CHAPTER 7

WASTEWATER

7-1. Black water

Black water refers to latrine wastewater containing human waste and is discussed in more detail in chapter 6.

7-2. Gray water

a. Gray water refers to wastewater from nonlatrine sources such as showers, laundry, kitchen operations, vehicle washracks, and handwash devices. Management of this wastewater is mission-specific, and depends upon factors such as field conditions, the number of Soldiers (volume of gray water), and the anticipated length of stay at a given location. Gray water management develops from primitive in the initial stages to semipermanent as the camp matures. However, the final design must be envisioned from the beginning. Some solutions (for example, lagoons or leach fields) require considerable space that may not be available after construction of other camp infrastructure. Other solutions (for example, self-provided treatment plants) need to be ordered at the beginning of deployment. Wastewater treatment plants (WWTPs) may also require gray water to dilute concentrated black water.

b. Make use of existing facilities that are available. If deployed near a municipal WWTP or sewage line, coordinate with local contracting and environmental offices to determine if connection to a municipal WWTP via collection lines is economically feasible and environmentally sound.

c. Gray water from showers and laundry will be discharged to the best facility available be it municipal or camp WWTP, leach field, or facultative lagoon in accordance with camp standards.

7-3. Reverse osmosis water purification unit (ROWPU) wastewater

Brine and wastewater produced from filter maintenance should be discharged to a WWTP. If a WWTP is not available, the ROWPU wastes may be discharged to a soakage pit or trench. During training, the brine can be blended with the excess product water before disposal. In the United States, National Pollutant Discharge Elimination System permits must be obtained prior to any ROWPU discharge to natural waters. Otherwise, wastewater must be collected and backhauled to garrison.

7-4. Vehicle washing

Vehicle washing should only occur at designated washracks. Within the United States, wastewater from these washracks must pass through a functioning oil-water separator prior to discharge to a sanitary sewer or permitted discharge point. No soap or emulsifiers should be used with oil-water separators unless specifically approved. During deployments, wastewater from vehicle washracks may discharge to a lagoon for treatment or storage.

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7-5. Handwash devices

Handwash devices must drain into a soakage pit or soakage trench according to FM 4-25.12 or be connected to the camp wastewater system.

7-6. Wastewater from decontamination

Wastewater from decontamination stations will be discharged into soakage pits or sumps away from natural water sources according to TB MED 577. When the unit vacates the area, any such soakage pits or sumps will be closed and marked properly. Wastewater collected from decontamination activities will be assessed for classification as HW according to chapter 4 of this TB MED.

7-7. Nonpotable water reuse

Gray and black water may be treated and disinfected according to TB MED 577 prior to reuse for dust control and other nonpotable uses. The treated effluent shall not have a biochemical oxygen demand (BOD₅) greater than 30 parts per million (ppm) or total suspended solids greater than 30 ppm. Sufficient disinfection shall be demonstrated by measurement of a detectable total chlorine residual 30 minutes after addition of chlorine. Additional treatment may be required in certain host nations and within the United States for protection of public health. Because of the stringent treatment requirements, it is usually not feasible to reuse black water in field environments.

7-8. Field wastewater disposal devices

Until WWTPs are made available, gray water should be disposed of in soakage pits or evaporation beds.

a. Soakage pits. In areas where the soil can be excavated to a depth of 4 feet without encountering ground water, soakage pits measuring 4 feet square by 4 feet deep should be constructed and filled with coarse well-draining material (see figure 7-1).

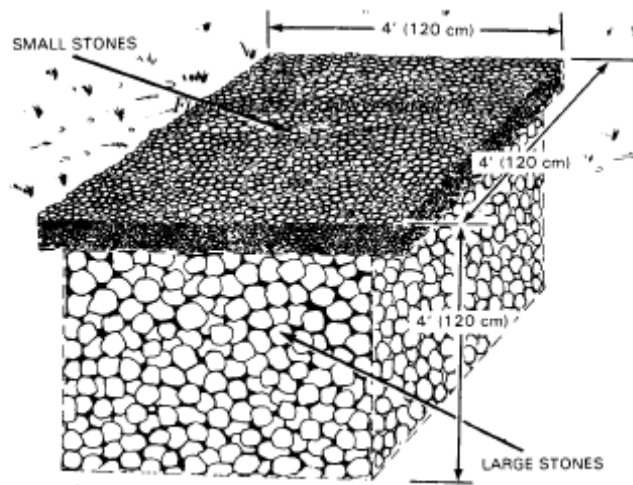


Figure 7-1. Standard soakage pit.

b. Soakage trenches. In areas where ground-water level or a rock formation precludes digging a full soakage pit, a pit measuring 2 feet square by 1 foot deep should be constructed and filled with coarse well-draining material. One-foot wide trenches should then be dug radiating outward from the pit in each direction. These trenches should vary in depth from 1 foot at the pit to 1.5 feet at the outer edges. Fill the trenches with the same well-draining material as the center pit.

c. Evaporation beds. Evaporation beds may be used in hot, dry climates. They may also be used where clay soil prevents the use of standard soakage pits. The beds measuring 8 feet by 10 feet are constructed by scraping off the topsoil and creating dikes around the beds tall enough to contain 3 inches of liquid (see figure 7-2).

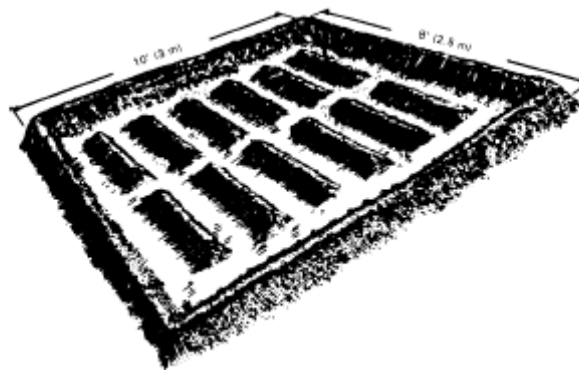


Figure 7-2. Evaporation bed.

d. *Grease traps.* Wastewater from food service operations should be passed through a grease trap prior to disposal in soakage pits/trenches and evaporation beds to prevent clogging, vector hazards, and odors. See figure 7-3 for an example of a field expedient grease trap.

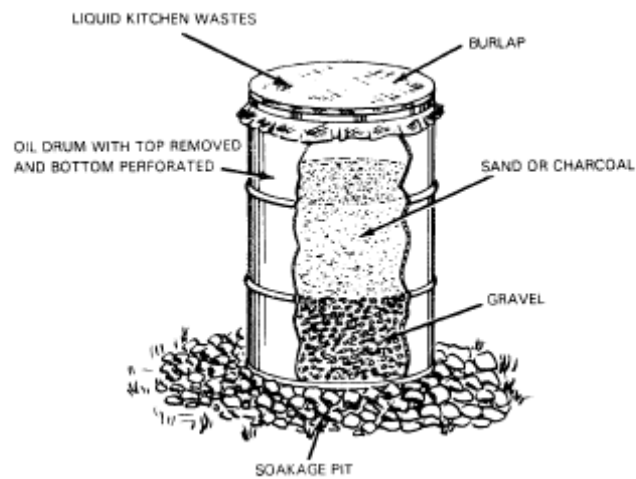


Figure 7-3. Barrel grease trap.

CHAPTER 8

SPILL PLANNING AND RESPONSE

8–1. Spill prevention and response plan

A Spill Prevention and Response Plan should be developed for each field or contingency operation. The major operations that need to have a copy of this plan are tactical refueling, maintenance, and POL/HM/HW storage and transportation. The plan should be kept in a location easily accessible to the Facility Incident Commander and the Facility Response Team. The plan should address, at a minimum, site-specific prevention measures, response procedures, and spill response equipment requirements for each major operation. For a more complete description of Spill Prevention and Response Plans, see FM 3-100.4 and 40 CFR 112.

8–2. Spill prevention measures

The spill prevention portion of plans should include—

- a.* Name and contact information of the Facility Incident Commander.
- b.* Facilities information.
- c.* Inventory of POL/HM/HW at each storage, handling, and transfer site.
- d.* Map with distance to nearby water bodies and predicted direction of flow.
- e.* Description of the prevention, controls, and countermeasures for each site such as secondary containment and periodic inspections.
- f.* Readily available emergency equipment.
- g.* Evacuation plan.
- h.* Description of deficiencies.

8–3. Spill response procedures

In the event of a POL/HM/HW spill, the procedures listed below must be implemented immediately by trained personnel within the unit. Personal safety must never be compromised during the response. Should the situation exceed unit capabilities, evacuate the area, inform the chain of command, and contact the local Hazardous Material Spill Response Team or Range Control. Emergency telephone numbers or radio frequencies should be obtained and distributed throughout the brigade before the field or contingency operation begins.

- a.* Protect yourself. Use the required PPE specified in the MSDS for the spilled material (or field expedient PPE such as impermeable gloves and goggles) and evacuate all nonessential personnel from the immediate area.
- b.* Stop the flow. The flow of POL/HM/HW must be stopped at the source in order to control the spill. This may be as simple as placing the container upright or closing a valve. In the event of a flammable material spill, use only nonsparking tools and ensure metal-to-metal contact is avoided since a spark could ignite the material.
- c.* Contain the spill. Proper containment includes placing drip pans where the material contacts the soil, placing soil berms or sand bags around the contaminated area, and placing

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absorbent material in the area of the spill. The purpose of this step is to prevent the spread of contamination.

d. Report the spill. Notify the chain of command and unit HW manager immediately. The local Hazardous Material Spill Response Team or Range Control should be notified if additional assistance is needed.

e. Clean the spill. Equipment used to clean a spill must be chosen carefully. Use only nonsparking tools if the material is flammable or explosive. For corrosive materials, use equipment that will not corrode or deteriorate (for example, nonmetallic equipment). Collect used absorbent and contaminated soil in plastic bags, and transfer the plastic bags into a labeled sturdy container to be disposed of as HW. Cleanup standards for petroleum-contaminated water call for removal of the POL sheen, and reduction of total petroleum hydrocarbons to 2000 ppm and gasoline to 10 ppm. During the initial period of camp development (0 to 6 months), petroleum-contaminated water will be treated with absorbent material. Engineers or contractors will move it offsite. During the temporary period (6 to 24 months) oil-water separators can be employed. Petroleum-contaminated soil may be transported offsite during the initial phase. During the temporary phase, petroleum-contaminated soil will be transported offsite or, preferably, bioremediated onsite by land farming.

f. Replace spill response equipment. Obtain replacement spill response equipment through the unit supply channels to ensure personnel can properly respond in the event of another spill.

8-4. Spill response equipment

Spill response equipment is essential in protecting the environment in the event of a POL/HM/HW spill. The type and amount of spill response equipment needed is dependent upon the operation. Units may also need to acquire hydrophobic absorbent materials for operations conducted in areas susceptible to large amounts of precipitation. Spill response equipment required for specific operations is discussed below.

a. Tactical refueling operations. Tactical refueling operations are limited to the handling of fuel products such as diesel and motor gasoline. The extent of the operations and load-carrying capabilities of fuel tankers and heavy expanded mobility tactical trucks restrict the amount and type of spill response equipment needed. In the event of a major spill during refueling operations, personnel primarily need two nonsparking picks and two nonsparking shovels to excavate contaminated soil and several large plastic bags to contain the excavated soil for disposal as HW. Approximately 10 pounds of absorbent and several small plastic bags are sufficient to respond to small volume spills on a hardstand. Nonsparking tools should also be readily available. Additional resources can be obtained through the supply channels as required.

b. Field maintenance operations. Field maintenance operations deal with all Class III items. Repeated small volume spills are typical during field maintenance operations. Approximately 25 pounds of absorbent, two nonsparking shovels, two brooms, and several small plastic bags for contaminated absorbent are sufficient to maintain field maintenance operations during field and contingency operations. Additional resources can be obtained through the supply channels as required.

c. HM/HW storage. Hazardous material and hazardous waste storage operations deal with all Class III items. Leaking containers and small volume spills are common during field HM/HW storage operations. Approximately 15 pounds of absorbent, two nonsparking shovels, two brooms, and several small plastic bags for contaminated absorbent are needed at each storage area. Additional resources can be obtained through the supply channels as required.

d. HM/HW transportation. Hazardous material and hazardous waste transportation operations deal with all Class III items. Leaking containers and small volume spills are common during HW transportation operations; however, the potential exists for large volume spills in the event of an accident. Each approved vehicle for HM/HW transportation should have approximately 25 pounds of absorbent, two picks, two shovels, one broom, and several small and large plastic bags for contaminated soil. Additional resources can be obtained through the supply channels if deemed necessary.

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**Table 8–1
Spill response supplies**

Item	National Stock Number
<u>Containers</u>	
Bottle, plastic, 5 gal	8125-00-888-7069
Bottle, plastic, 13 gal	8125-00-731-6016
Drum, steel, bung top (1A1), 5 gal*	8100-00-282-2520
Drum, steel, open top (1A2), 30 gal*	8110-00-366-6809
Drum, steel, open top (1A2), 55 gal*	8110-00-030-7780
Drum, plastic, open top (1H2), 55 gal*	8110-01-282-7615
<i>*United Nations-approved containers</i>	
<u>Absorbents</u>	
Absorbent, ground clay, bag	7930-00-269-1272
Absorbent, granular, 1 cu ft bag, 4/case	4235-01-423-1466
Absorbent, granular, 2 cu ft bag, 3/case	4235-01-423-0711
Absorbent, Oclansorb, 6 lb bag	4235-01-431-9896
Absorbent, Oclansorb, 18 lb bag	4235-01-377-5080
Absorbent, granular, 30 lb pail	4235-01-459-1847
Absorbent, granular, 44 lb bag	4235-01-459-1845
Absorbent, granular, 500 lb	4235-01-459-1839
Absorbent, granular, 1825 lb	4235-01-459-1843
<u>Pads, socks, and booms</u>	
Pads, absorbent, hazmat	4235-01-391-2052
Pads, absorbent, oil	4235-01-417-1959
Pads, absorbent, 6 ft × 46 in, 25/box	4235-01-459-1787
Pads, drum, 22 in diameter, 150/box	4235-01-459-1783
Pillow, absorbent, 30/case	4235-01-423-1463
Sock, spill containment, 8 in × 4 in	4235-01-391-2048
Sock, spill containment, 8 ft × 4 in, 10/case	4235-01-423-1465
Sock, spill containment, 10 ft × 2 in, 20/case	4235-01-423-1467
Boom, spill containment, 10 ft × 10 in, 3/case	4235-01-423-2787
Sheet, absorbent, oil, 4 ft × 500 ft roll	4235-01-459-1796
<u>Spill Kits</u>	
Kit, spill response, nylon tote bag	4235-01-432-7909
Kit, spill, 25 gal drum (includes pads, socks, absorbent, Tyvek suits, gloves, and goggles)	4235-01-432-7912
Kit, spill, 55 gal drum (includes pads, socks, absorbent, Tyvek suits, gloves, and goggles)	4235-01-423-7214
Kit, spill, 55 gal drum (includes pads, socks, absorbent, emulsifier, Tyvek suits, gloves, shovel, bucket, scoop, and goggles)	4235-01-423-7221
Kit, spill, small, camo	4235-01-420-0905
Kit, spill, large, camo	4235-01-420-0895
<u>PPE and safety</u>	
Goggles, splash protective	4240-00-190-6432
Gloves, chemical protective	8415-01-013-7384
Station, eye wash, portable	4230-01-294-2118

APPENDIX A

REFERENCES

Section I

Required Publications

Unless noted otherwise, electronic versions of the publications listed below can be found online as follows:

- a. Codes of Federal Regulations: <http://www.gpoaccess.gov/cfr/index.html>
- b. Army Regulations: <http://www.army.mil/usapa/epubs/index.html>
- c. Department of Defense Publications: <http://www.dtic.mil/whs/directives/corres/pub1.html>
- d. Field Manuals and Training Circulars: <http://www.army.mil/usapa/doctrine/index.html>
- e. Technical Bulletins, Medical: <http://chppm-www.apgea.army.mil/tbm.htm>

40 CFR 112

Oil Pollution Prevention

40 CFR 240-299

Resource Conservation and Recovery Act

40 CFR 258

Criteria for Municipal Solid Waste Landfills

40 CFR 261

Identification and Listing of Hazardous Waste

49 CFR 100-185

Department of Transportation Hazardous Materials Regulation

AFMAN 24-204(I)/TM 38-250

Preparing Hazardous Materials for Military Air Shipments. (Available at <http://www.e-publishing.af.mil/>)

AR 700-48

Management of Equipment Contaminated with Depleted Uranium or Radioactive Commodities

AR 200-1

Environmental Protection and Enhancement

AR 380-5

Department of the Army Information Security Program

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ASTM E2318-03

Standard Guide for Environmental Health Site Assessment Process for Military Deployments

DLAR 4145.11

Safeguarding of DLA Sensitive Inventory Items, Controlled Substances, and Pilferable Items of Supply. (Available at <http://www.dla.mil/dlaps/>)

DOD 4160.21-M

Defense Materiel Disposition Manual

DOD 4500.9-R

Defense Transportation Regulation

DOD 4715.5-G

Overseas Environmental Baseline Guidance Document

FM 3-100.4

Environmental Considerations in Military Operations

FM 4-25.12

Unit Field Sanitation Team

Supply Bulletin 8-75-11

Army Medical Department Supply Information. (Available at <http://www.usamma.army.mil/index.cfm>)

TB MED 530

Occupational and Environmental Health Food Sanitation

TB MED 577

Sanitary Control and Surveillance of Field Water Supplies

TM 5-634

Solid Waste Management. (Available at <http://www.hnd.usace.army.mil/techinfo/engpubs.htm>)

TM 38-410

Storage and Handling of Hazardous Materials. (Available at <https://www.logsa.army.mil/etms/welcom1.htm>)

UFC 3-240-10A

Sanitary Landfill. (Available at http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4)

Section II

Related Publications

A related publication is a source of additional information. The user does not have to read it to understand this bulletin. Handbooks from the Center for Army Lessons Learned can be downloaded from <https://call2.army.mil/callproducts.asp>. Department of the Army Pamphlets can be found at <http://www.army.mil/usapa/epubs/index.html>.

21 CFR 1308

Schedules of Controlled Substances

AFPMB Technical Guide No. 21

Pesticide Disposal Guide for Pest Control Shops. (Available at <http://www.afpmb.org/pubs/tims/tims.htm>)

AR 40-5

Preventive Medicine

AR 40-12

Quarantine Regulations of the Armed Forces

AR 40-61

Medical Logistics Policies

CALL Handbook No. 04-11

Field Sanitation in Contingency Operations

DA Pam 40-11

Preventive Medicine

DA Pam 200-1

Environmental Protection and Enhancement

DA Pam 700-48

Handling Procedures for Equipment Contaminated with Depleted Uranium or Radioactive Commodities

FM 3-34.471

Plumbing, Pipe Fitting, and Sewerage

FM 3-100.21

Contractors on the Battlefield

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FM 8-250

Preventive Medicine Specialist

FM 21-10

Field Hygiene and Sanitation

FM 100-10-2

Contracting Support on the Battlefield

JP 4-06

Mortuary Affairs in Joint Operations. (Available at <http://www.dtic.mil/doctrine/jplogisticseriespubs.htm>)

MEDCOM Regulation 40-35

Management of Regulated Medical Waste (RMW). (Available at <https://www.us.army.mil>; or from Department of the Army Headquarters, U.S. Army Medical Command, ATTN: MCHO-LOZ, 2050 Worth Road, Fort Sam Houston, TX 78234-6000; or MEDCOM Publications Control Officer at MEDCOMpubscontrolofficer@amedd.mil)

North Atlantic Treaty Organization Standardization Agreement No. 2982

Essential Field Sanitary Requirements. (Available at <http://nsa.nato.int/>)

Public Works Technical Bulletin 420-70-8

Installation Asbestos Management Program. (Available at <http://www.wbdg.org/wbdg/query.html>)

Training Circular 3-34.489

The Soldier and the Environment. (Available at <https://atiam.train.army.mil/soldierPortal/atia/adlsc/view/public/8585-1/tc/3-34.489/toc.htm>)

UFC 4-451-10N

Design: Hazardous Waste Storage. (Available at http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4)

USACHPPM Technical Guide 217

Hazardous Material/Hazardous Waste Management Guidance for Maneuver Units During Field and Deployment Operations. (Available at <http://chppm-www.apgea.army.mil/tg.htm>)

USACHPPM Technical Information Paper No. 32-001-0904

Field Wastewater Management in Desert Environments. (Available at <http://usachppm.apgea.army.mil/swwp/swwp.htm>)

USACHPPM Information Paper No. 32-024

Disposal Options and Procedures for Wastes Generated by Reverse Osmosis Purification Units.
(Available at <http://chppm-www.apgea.army.mil/dehe/pgm31/WaterRef.aspx#IP>)

You Spill, You Dig II

An Environmental Handbook for Sustained Deployment Operations. (Available at <http://www.vcorps.army.mil/Safety/default.htm#Environmental>)

Section III

Prescribed Forms

None

Section IV

Referenced Forms

Electronic versions of DOD and DA forms may be downloaded from the following Web site:
<http://www.army.mil/usapa/eforms/index.html>

DA Form 3161

Request for Issue or Turn-in

DD Form 836

Dangerous Goods Shipping Paper/Declaration and Emergency Response Information for Hazardous Materials Transported by Government Vehicles/Containers or Vessel

DD Form 1348-1A

Issue Release/Receipt Document

DD Form 1348-2

Issue Release/Receipt Document with Address Label

DD Form 1911

Materiel Courier Receipt

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GLOSSARY

Section I **Abbreviations**

AFMAN
Air Force Manual

AFPMB
Armed Forces Pest Management Board

AR
Army Regulation

ASTM
American Society for Testing and Materials

BOD
biochemical oxygen demand

CALL
Center for Army Lessons Learned

CFR
Code of Federal Regulations

CLP
cleaner, lubricant, and preservative

CONUS
continental United States

DA Pam
Department of the Army Pamphlet

DLA
Defense Logistics Agency

DLAR
Defense Logistics Agency Regulation

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DOD

Department of Defense

DPW

Directorate of Public Works

DRMS

Defense Reutilization and Marketing Service

EBS

Environmental Baseline Survey

EHSA

Environmental Health Site Assessment

°C

degrees Celsius

°F

degrees Fahrenheit

FGS

Final Governing Standards

FM

Field Manual

FST

Field Sanitation Team

HEPA

high-efficiency particulate air

HM

hazardous material

HW

hazardous waste

JP

Joint Publication

MEDCOM

United States Army Medical Command

MIDI

Military Item Disposal Instructions

mg/L

milligrams per liter

MMQC

medical materiel quality control

MNBCDM

medical nuclear, biological, and chemical defense materiel

MRE

meal, ready-to-eat

MSDS

material safety data sheet

NBC

nuclear, biological, and chemical

NSN

National Stock Number

OCONUS

outside the continental United States

ppm

parts per million

POL

petroleum, oil, and lubricants

PPE

personal protective equipment

psi

pounds per square inch

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RMW

regulated medical waste

ROWPU

Reverse Osmosis Water Purification Unit

SW

solid waste

TB MED

Technical Bulletin, Medical

TM

Technical Manual

UFC

United Facilities Criteria

UN

United Nations

USACHPPM

United States Army Center for Health Promotion and Preventive Medicine

WWTP

wastewater treatment plant

Section II

Terms

Aerated (turned) windrow composting

Process in which organic waste is formed into rows of long piles called "windrows" and aerated by turning the pile periodically by either manual or mechanical means.

Backhauling

The rearward movement of cargo from a forward area to a staging base (either in-theater or out).

Black water

Latrine wastewater containing human waste.

Brine

Water containing a significant amount of salt.

Chemical latrine

A portable self-contained toilet usually molded in plastic. They are large enough for a single occupant and held upright by the weight of the disinfectant liquid in the holding tank at the bottom.

Class VIII

Medical materiel

Contingency operation

A military operation in which members of the Armed Forces are or may become involved in military actions, operations, or hostilities against an enemy.

Controlled substance

A drug or other chemical substance listed in schedules I, II, III, IV, or V of 21 CFR 1308. The U.S. Drug Enforcement Administration regulates the possession and use of these substances.

Emulsifier

A surface-active agent (such as soap) that creates a suspension of one liquid in another.

Garbage

Solid or semisolid waste incidental to preparing, cooking, or serving food, and cleaning of food service items. It does NOT include trash.

Gray water

Wastewater from non-human waste sources such as showers, laundry, kitchen operations, vehicle washracks, and handwash devices.

Hazardous waste

Discarded hazardous materials that have no further value to the user, cannot be reused or recycled, and are potentially harmful to human health or the environment.

Human waste

Byproduct of human digestion (that is, feces or urine).

In-vessel composting

Process in which organic materials are fed into a drum, silo, concrete-lined trench, or similar equipment where the environmental conditions—including temperature, moisture, and aeration—are closely controlled. The apparatus usually has a mechanism to turn or agitate the material for proper aeration.

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Latrine

A communal toilet of a type often used in a camp or barracks.

Nonterne-plated

Terne is a lead alloy used as a corrosion inhibitor on steel. Nonterne-plated materials do not contain terne and, therefore, have lower levels of lead than terne-plated materials.

Regulated medical waste

Wastes generated by medical, veterinary, and dental treatment facilities in the diagnosis, treatment, research, or immunization of human beings or animals which are potentially capable of causing disease, and may pose a risk to either individuals or community health if not handled or treated properly. These types of wastes are defined in MEDCOM Regulation 40-35 and include: cultures and stocks of infectious agents; pathological waste (tissues, organs, body parts, teeth); human blood and blood products; contaminated animal carcasses, body parts, and bedding used in animal research; isolation waste from patient rooms; sharps (syringes, scalpels, blades); and human body fluids (semen, vaginal secretions, cerebrospinal fluids, pleural fluids).

Retrograde cargo

Cargo evacuated from foreign countries.

Reverse Osmosis Water Purification Unit

An electric-powered purification system that uses a variety of filters and chemicals to produce potable water from any water source.

Rubbish

See *trash*.

Secondary containment

A physical barrier used to contain spills.

Solid Waste

Garbage, refuse, and sludge from a waste treatment plant, water supply 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 irrigation return flows or industrial discharges, or the source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 as amended. Solid waste includes liquid kitchen waste, garbage, rubbish or trash, regulated medical waste, hazardous waste, and human waste.

Special waste

Discarded materials that do not meet the regulatory criteria for classification as a hazardous waste, but still pose hazards to human health or the environment. Examples include used oil or antifreeze collected for recycling, alkaline batteries, and asbestos-containing materials.

Trash

Wastes originating from service facilities, barracks, wards, quarters, and offices. It includes items such as waste paper, plastics, wood, metal, glass, ashes, and broken or damaged crockery.

Vector

A disease-transmitting organism.

By Order of the Secretary of the Army:

Official:



JOYCE E. MORROW
*Administrative Assistant to the
Secretary of the Army*

PETER J. SCHOOMAKER
*General, United States Army
Chief of Staff*

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