

TB MED 593

TECHNICAL BULLETIN

GUIDELINES FOR FIELD WASTE MANAGEMENT

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HEADQUARTERS, DEPARTMENT OF THE ARMY

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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.

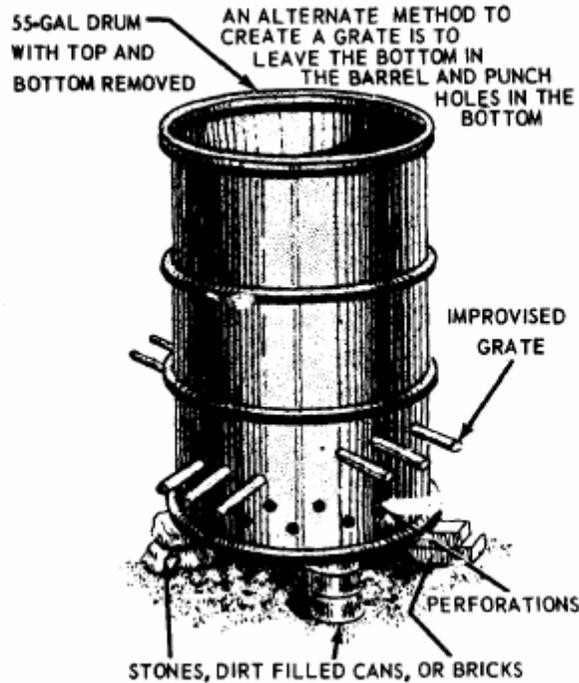


Figure 3-1. Barrel incinerator.

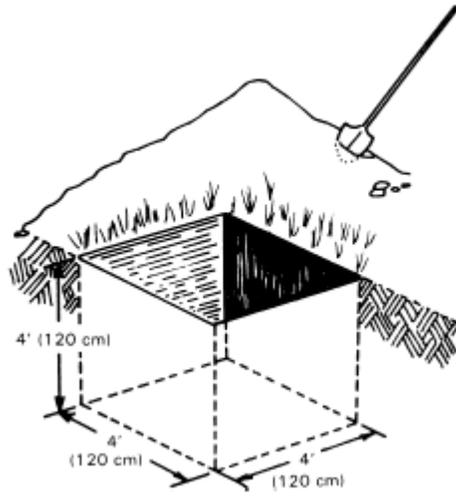


Figure 3-2. Garbage burial pit.

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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

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