

**Establish a Unit Hazardous Waste Accumulation Point
05-2-7500 / Version 1
Effective Date 17 Feb 2012**

SECTION I. ADMINISTRATIVE DATA

All Courses Including This Lesson

<u>Course Number</u>	<u>Version</u>	<u>Course Title</u>
None		

Task(s) Taught(*) or Supported

<u>Task Number</u>	<u>Task Title</u>
<u>Collective</u>	
05-2-7500	Establish a Unit Hazardous Waste Accumulation Point

Reinforced Task(s)

<u>Task Number</u>	<u>Task Title</u>
None	

Knowledge

<u>Knowledge Id</u>	<u>Title</u>	<u>Taught</u>	<u>Required</u>
None			

Skill

<u>Skill Id</u>	<u>Title</u>	<u>Taught</u>	<u>Required</u>
052-S-00452	Identify Hazardous Material and MSDS Sheets as They are Used in the Army	No	Yes
052-S-00453	Identify Hazardous Waste and Hazardous Material Used in Your Operation Environment	No	Yes

Administrative/ Academic Hours

The administrative/academic hours required to teach this lesson are as follows:

<u>Academic</u>	<u>Resident Hours / Methods</u>		
Yes	1 hr	0 mins	Oral Presentation
Yes	0 hrs	0 mins	Test Review
Yes	0 hrs	0 mins	Test
Total Hours:		1 hr	0 mins

Test Lesson Number

<u>Hours</u>	<u>Lesson Number</u>
None	

Prerequisite Lesson(s)

<u>Lesson Number</u>	<u>Lesson Title</u>
None	

Clearance Access

Security Level: Unclassified

Foreign Disclosure Restrictions

FD5. This product/publication has been reviewed by the training/educational developers in coordination with the Fort Leonard Wood FD authority. This product is releasable to students from all requesting foreign countries without restrictions.

References

<u>Number</u>	<u>Title</u>	<u>Date</u>	<u>Additional Information</u>
40 CFR	Protection of the Environment	01 Jul 2006	
FM 3-34.5	ENVIRONMENTAL CONSIDERATIONS	16 Feb 2010	
PAM 710-7	HAZARDOUS MATERIAL MANAGEMENT PROGRAM	29 Jul 2007	
TG 217	Technical Guide 217, Hazardous Material/Hazardous Waste Management Guidance for Maneuver Units During Field and Deployment Operations	02 Oct 2000	
TM 38-410	STORAGE AND HANDLING OF HAZARDOUS MATERIALS {DLAM 4145.11; NAVSUP PUB 573; AFR 69-9; MCO 4450-12}	13 Jan 1999	
UFC 4-451-10N	DESIGN: HAZARDOUS WASTE STORAGE	16 Jan 2004	

Student Study Assignment

None

Instructor Requirements

Instructor should be familiar with this lesson. It is preferred that the instructor have some experience in dealing with hazardous materials/waste and environmental issues. Additional assistance can be obtained from the local DPW.

Additional Support Personnel Requirements

<u>Name</u>	<u>Student Ratio</u>	<u>Qty</u>	<u>Man Hours</u>
None			

Equipment Required for Instruction

<u>ID - Name</u>	<u>Student Ratio</u>	<u>Instructor Ratio</u>	<u>Spt</u>	<u>Qty</u>	<u>Exp</u>
None					

Materials Required

Instructor Materials:

References listed in this lesson, specifically UFC 4-451-10N and TM 38-410.

Student Materials:

References should be made available to the students. Pen and paper for classroom. Required construction materials if HWAP is being constructed.

Classroom, Training Area, and Range Requirements

<u>ID - Name</u>	<u>Quantity</u>	<u>Student Ratio</u>	<u>Setup Mins</u>	<u>Cleanup Mins</u>
17120-M-1200-30 Classroom, Multipurpose, 1200 Square Feet, 30 Students	1	1:24	0	0
17999 Training Area, Field	1	1:24	0	0

**Ammunition
Requirements**

DODIC - Name

Exp

Student
Ratio

Instruct
Ratio

Spt
Qty

None

**Instructional
Guidance**

NOTE: Before presenting this lesson, instructors must thoroughly prepare by studying this lesson and identified reference material.

None

**Proponent Lesson
Plan Approvals**

Name

Rank

Position

Date

Al Vargesko

Not available

Approver

17 Feb 2012

SECTION II. INTRODUCTION

Method of Instruction: Oral Presentation
Instr Type(I:S Ratio/Qty): Instructor Qualified SME (1:24/0)
Time of Instruction: 5 mins
Instructional Strategy: Small Group Instruction

Motivator

With the recent media discussion of the possibility of Hazardous Waste not being properly stored and disposed of in burn pits and the possible health effects this has caused our troops. Knowledge of how to establish and maintain a Hazardous Waste Accumulation Point will reduce the threats to our troops.

Terminal Learning Objective

NOTE. Inform the students of the following Terminal Learning Objective requirements.
At the completion of this lesson, you [the student] will:

Action:	Establish a Hazardous Waste Accumulation Point (HWAP) that is constructed to the plans and specifications within the time frame prescribed in the mission directive.
Conditions:	The element is performing a unit mission, either at home station or deployed, and receives a WARNO to establish a new Hazardous Waste Accumulation Point (HWAP). Timelines are specified in the directive. All organic tools, materials and equipment are available. This task should not be trained in MOPP4.
Standards:	The element establishes a HWAP structure. The structure is constructed to the plans and specification within the time prescribed in the mission directive.

Safety Requirements

Safety is low in the classroom setting. In field construction, appropriate safety construction equipment should be used and PPE should be worn. During operation of the HWAP, all safety requirements will be in place before operation begins and followed once operation has started.

Risk Assessment Level

None

Environmental Considerations

NOTE: Instructor should conduct a Risk Assessment to include Environmental Considerations IAW FM 3-34.5, Environmental Considerations {MCRP 4-11B}, and ensure students are briefed on hazards and control measures.

If conducted as a table top exercise or in the classroom, little or no impact on the environment. If constructed, then specific guidelines must be followed or potential to impact the environment adversely could be significant.

Evaluation

NOTE: Describe how the student must demonstrate the accomplishment of the TLO. Refer student to the Student Evaluation Plan.

Instructional Lead-in

How is a hazardous waste accumulation point (HWAP) established? We will be discussing many different areas in standing up a HWAP, but first, what is a hazardous wastes?

SECTION III. PRESENTATION

NOTE: Inform the students of the Enabling Learning Objective requirements.

A. ENABLING LEARNING OBJECTIVE

ACTION:	HWAP Overview
CONDITIONS:	Given the requirements for a waste to be classified as hazardous.
STANDARDS:	Cite three ways to determine if a waste is a hazardous waste.

ELO A - LSA 1. Learning Step / Activity ELO A - LSA 1. When is a Waste Hazardous?

Method of Instruction: Oral Presentation

Instr Type(I:S Ratio/Qty): Instructor Qualified SME(1:24/0)

Time of Instruction: 0 hrs 5 mins

Instructional Strategy: Small Group Instruction

Media Type: Computer Assisted Instruction

Security Classification: Unclassified

Slide 3:

EPA defines hazardous waste in 40 CFR 261:

1. Meets the definition of one or more of the hazardous waste "characteristics". The four characteristics are:

- Ignitable. Ignitable waste materials are liquids that have a flashpoint of less than 140 degrees F. or solids that catch fire easily and burn so rapidly that they create a serious health hazard.
- Corrosive . A corrosive is a liquid that has a pH value less than or equal to 2.0, or a pH value equal to or greater than 12.5. Corrosives will corrode a standard metal container.
- Reactive. Waste materials that are normally unstable, react violently with water, have explosive potential, or release poisonous gases, are reactive.
- Toxic. A waste is toxic if, when tested by an EPA-approved method, an extract from the waste contains specified concentrations of heavy metals or pesticides.

2. The waste is a "listed" hazardous waste (EPA has provided lists of specific wastes in the hazardous waste regulation).

3. Prior knowledge from testing performed by generator.

Slide 4:

Ignitability is a characteristic of liquids having a flashpoint of less than 140 F.

Slide 5:

Corrosives are usually classified as acids or bases. Acids are at the lower end of the pH scale; bases at the higher end of the scale. Purified water is neutral at 7.0.

Slide 6:

Reactives are especially dangerous because of their instability. It is important to know

if you are using reactivities, because in case of a fire you may want to only use foam and not water.

Slide 7:

A solid waste exhibits the characteristic of toxicity if the extract of a representative sample of the waste contains any of the contaminants listed in Table 1 in 261.24, at or above the specified regulatory levels

D-listed wastes with toxic characteristics include arsenic, benzene, chloroform, lead, mercury, silver and vinyl chloride.

Slide 8:

Some common facility/unit waste streams include.

Check on Learning: What are three ways a waste can be regulated as hazardous?

Name two common waste streams where hazardous waste may be generated?

Review Summary: Now we should know how to determine if a waste is hazardous or not. Next we will be looking at how to construct a hazardous waste accumulation point to store the waste at.

CHECK ON LEARNING (ELO A): What are three ways a waste can be regulated as hazardous?

Name two common waste streams where hazardous waste may be generated?

REVIEW SUMMARY(ELO A): Now we should know how to determine if a waste is hazardous or not. Next we will be looking at how to construct a hazardous waste accumulation point to store the waste at.

B. ENABLING LEARNING OBJECTIVE

ACTION:	Planning and Site Selection
CONDITIONS:	Given this lesson and associated references.
STANDARDS:	List the major planning and siting requirements differences for indoor and outdoor HWAP's.

ELO B - LSA 1. Learning Step / Activity ELO B - LSA 1. Planning and Siting

Method of Instruction: Oral Presentation
Instr Type(I:S Ratio/Qty): Instructor Qualified SME(1:24/0)
Time of Instruction: 0 hrs 10 mins
Instructional Strategy: Small Group Instruction

Slide 10:

In planning any waste collections area, keep in mind the allowable waste quantities and waste accumulations times that are allowed. In this lesson we are focusing on a Hazardous Waste Accumulation Point (HWAP) area should meet the specific requirements of a particular generator. Maximum accumulation time for any one 55 gallon container is generally 90 days.

Slide 11:

Waste collection areas may be indoors or outdoors and they must be in formally designated area; sited away from vehicular traffic, sewer drains, storm drains, and property boundaries; provide adequate space for aisles around each container (3').

It is also recommended that the area be sited on a non-porous surface, such as specially coated concrete and secured from unauthorized entry (a room or fenced-in area that can be locked). Protected from exposure to sun and rain (accomplished by choosing an indoor area, or covering the area with a canopy).

Slide 12:

Provide a minimum buffer zone of 15 meters (50 feet) between the hazardous waste (HW) storage building and adjacent inhabited areas, facilities, and waterways. The buffer zone begins at the outer limit of the storage containers when outdoor storage is planned. Larger buffer zones are required for mission areas storing products such as petroleum, flammable or combustible liquids, and toxic materials. Refer to Fire Protection for Facilities Engineering, Design, and Construction, the Uniform Building Code and the National Fire Protection Association (NFPA) standards for information on critical buffer zones. Evaluate the following factors when selecting a site for a HW storage facility: the quantity and type of hazardous material stored, storage retrieval system (e.g., racking, shelving, and stacking), automatic fire suppression systems, size of doors and windows and other openings on adjacent buildings, building construction materials (including fire walls and doors), the relative height of adjacent buildings, and other environmental conditions such as prevailing winds and topography. The type of materials stored over the life of the facility may change as the mission changes. Most building and fire codes protect people and property from fire and explosion hazards but do not address health and environmental effects of an accidental release or long-term, low-level exposures. Conduct a risk assessment and appropriate hazard analysis for accidental releases and day-to-day operations at HW storage buildings. A more detailed analysis may be required for HW facilities located near waterways, inhabited areas, and non-industrial areas such as housing and child care centers. Use sound scientific and engineering principles up front during planning and design to identify and minimize hazards associated with the facility throughout its life cycle.

Slide 13:

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

Slide 14:

Communication is very important and telephone or wireless communications must be provided. Depending on the HWAP size, internal communications should consist of a master and stations receive and talk, if the size of facility warrants (40 CFR 265.32). Emergency alarms shall provide the capability of activating an emergency alarm from each storage area and office. The sprinkler alarm system shall be equipped to transmit alarms to the fire station or to a suitable location that is continuously manned when a local fire station is not available.

Slide 15:

The fence for the storage area shall be 15 feet from the outside perimeter road of the facility.

Specifically:

- Height. The standard height of a security fence is eight feet (2.4) meters).
- Fence Placement. No fence will be located so that the features of the land (its topography) or structures (buildings, utility tunnels, light and telephone poles, fire escapes, ladders, etc.) defeat its purpose by allowing passage over, around or under the fence.
- Barriers. Buildings, structures, waterfronts and other barriers used instead of (or as a part of) a fence line must provide equivalent protection to the fencing required for that area. Therefore, all windows, doors and other openings or means of access must be guarded or properly secured.

Check on Learning:

The minimum buffer zone of ___ feet between the hazardous waste (HW) storage building and adjacent inhabited areas, facilities, and waterways?

Fence for the storage area is at least feet from the outside perimeter road of the facility?

Review Summary:

We have looked at some considerations for planning and siting a HWAP and discussed the allowable waste quantities, indoor and outdoor facilities, buffer zones, NFPA requirements, access roads, communications and security. Are there any questions? There may be additional considerations depending on your location. Now we will look at the design standards required when building the facility.

CHECK ON LEARNING (ELO B):

What is the minimum buffer zone between the hazardous waste (HW) storage building and adjacent inhabited areas, facilities, and waterways?

The standard height of a security fence is ____ feet?

REVIEW SUMMARY(ELO B):

We have looked at some considerations for planning and siting a HWAP and discussed the allowable waste quantities, indoor and outdoor facilities, buffer zones, NFPA requirements, access roads, communications and security. Are there any questions? There may be additional considerations depending on your location. Now we will look at the design standards required when building the facility.

C. ENABLING LEARNING OBJECTIVE

ACTION:	Design Standards
CONDITIONS:	Given this lesson and the list references.
STANDARDS:	Create a list of materials that will need to be obtained to construct the HWAP to standard to protect troops and the environment.

ELO C - LSA 1. Learning Step / Activity ELO C - LSA 1. Construction

Method of Instruction: Oral Presentation

Instr Type(I:S Ratio/Qty): Instructor Qualified SME(1:24/0)

Time of Instruction: 0 hrs 10 mins

Instructional Strategy: Small Group Instruction

Media Type: Computer Based Instruction

Security Classification: Unclassified

Slide 17:

The performance standards for most hazardous waste management units vary depending on whether the unit is permitted or is operating under interim status while in CONUS.

If in the theater of operations (T.O.) the facility is not required to be permitted. OCOUNS will depend on the host nation requirements.

Slide 18:

Building must be constructed of man-made materials; provide sufficient structural strength to prevent unit failure; be completely enclosed (floor/walls/roof); have a decontamination area for personnel, equipment, and vehicles.

Doors/Windows must be placed so as not to come into contact with waste, and have dust controls to minimize fugitive emissions.

Contact Surfaces must be chemically compatible with waste.

Primary Barrier (flooring) must be constructed of man-made material (typically concrete); be structurally sound and chemically compatible with waste.

Slide 19:

In addition to the previously listed materials, the following additional design criteria for containment buildings used to manage liquids follows.

Primary Barrier must be sloped toward liquid collection device. Liquid Collection System must allow for removal of waste for proper Resource Conservation and Recovery Act (RCRA) management. Leak Detection System must detect release of waste at earliest practicable time.

Secondary Barrier must be structurally sound and chemically resistant to the waste; must contain and allow for removal of accumulating wastes.; is required only for "wet areas" within the unit, but recommended for both "wet" and "dry areas."

Slide 20:

When setting up a HW accumulation point, you normally will develop one for each of the waste streams that will be generated. If the waste will be under the same roof, then you will need to plan adequate space for the drums that will be stored waiting for transport to the HW storage area, segregation walls, secondary containment, spill containment kits, and adequate aisle space.

The accumulation points are not designed for long term storage of any waste streams.

Slide 21:

Access to and exit from the storage facility will be restricted to periods when the facility is manned. During periods when the facility is not manned, entrance shall be completely restricted either through locked gates, door, or both. In accordance with 40 CFR 264.14 (c), a sign visible from 8 meters (25 feet) shall be placed on all access roads and entrances to the storage facility. The sign shall have the legend: "Danger -Unauthorized Personnel Keep Out," signage will also identify the area and include contact information: name and phone extension.

Check on Learning: What is the typical man-made construction material used in constructing a HWAP?

When must a leak detection system be installed?

Review Summary: We have discussed the construction design standards for a HWAP, specifically, the building, floors, contact surfaces, primary and secondary Barrier's and access to and exits from. What questions do you have at this point?

CHECK ON LEARNING (ELO C): What is the typical man-made construction material used in constructing a HWAP?

When must a leak detection system be installed?

REVIEW SUMMARY(ELO C): We have discussed the construction design standards for a HWAP, specifically, the building, floors, contact surfaces,

primary and secondary Barrier's and access to and exits from. What questions do you have at this point?

D. ENABLING LEARNING OBJECTIVE

ACTION:	Operations
CONDITIONS:	Given this lesson and required references.
STANDARDS:	List seven major items required to be able to operate a HWAP safely and in a environmentally friendly manner.

ELO D - LSA 1. Learning Step / Activity ELO D - LSA 1. Operating a HWAP

Method of Instruction: Oral Presentation
 Instr Type(I:S Ratio/Qty): Instructor Qualified SME(1:24/0)
 Time of Instruction: 0 hrs 15 mins
 Instructional Strategy: Small Group Instruction
 Media Type: Computer Assisted Instruction
 Security Classification: Unclassified

Slide 23:

The facility design must be closely coordinated with the using agency's operational plan and requirements, as well as the comprehensive and contingency plans (fire protection, spill containment, disaster preparedness, etc.) of the host installation.

Slide 24:

Soldiers and civilians who work with HM/HW are required to have function-specific training.

- (1) Handlers
- (2) Accumulation Point Managers
- (3) Packagers/Shippers
- (4) Spill response teams

Some of this training requires update/refresher training

NOTE: Check with your installation/facility environmental office for more information.

Maintain certificates on file within the unit records.

Must have appropriate PPE available for personnel; they must be trained on how to use it and maintain it.

Slide 25:

Secondary containment is required for liquid hazardous waste or other waste that might be released into the environment, such as dusts, powders, and shavings.

Planning for adequate containment includes consideration of capacity as well as waste compatibility requirements.

Secondary containment can be constructed or it can be purchased.

Slide 26:

Containers and prefabricated or portable storage units are available in a variety of

sizes, ranging from single-drum containers to rooms capable of holding a dozen drums.

Only non-leaking containers that are safe to handle and correctly labeled shall be stored in the facility. The containers shall be stored according to type and in such a manner as to facilitate inspection and removal with a minimum of handling. The quantities and type of storage will dictate the space available, must be specified during the design, and must be adhered to by the operating agency.

Slide 27:

Make sure the container is appropriate to the material to be stored and that it is in good condition. Ensure proper PPE is used.

Due to vapor expansion at higher temperature or pressure, you should leave headspace to prevent containers from bulging and losing their integrity. Do not overfill any container; general rule of thumb for headspace: leave 5 inches for a 55-gallon drum in most CONUS climates – more if in hot climates.

Slide 28:

Do not stack drums more than 2 high. When drums are stored on their sides bung ports for drums should be placed at 9 o'clock and 3 o'clock positions. If the bungs leak, then only 50% of the container will drain.

Flammable containers will not be stacked and must be grounded.

There must be at least 3 feet of aisle space between rows of containers to permit fire fighting equipment.

Slide 29:

Containers should be protected from the weather to avoid corrosion (if stored outside, cover) and to protect any storm water from contamination.

Store in approved cabinets, rooms and building.

Containers must have lids and remain closed when not being filled.

Slide 30:

Recordkeeping is required by law and is important to help document that you have been properly managing your HW. It is also important as units rotate in-and-out so the knowledge is not lost.

The last two forms are not always required, but are helpful and may be a local requirement.

Slide 31:

HWAP must be formally designated and must meet Resource Conservation Recovery Act requirements. In some states, additional requirements are even more stringent, so it's wise to contact the environmental office for specific about storage. A satellite accumulation point may be in a Motor Pool, Arms Room, hospital Labs and CBRN Room or all four locations. You still need to take care of each location and check periodically. General items to look for are:

- (1) Containers cannot be larger than 55 gallons or 1 quart for acutely hazardous waste.
- (2) Containers are located at or near the point of origination of the waste.
- (3) Containers are under control of the operator generating the waste.
- (4) Containers must be dated either when full or once first drop of waste is put in the container (depends on the state law).
- (5) Full containers must be turned into a permitted or temporary storage area within 72 hours.

Slide 32:

HW SAPs should include secondary containment, labeling/signage, accumulation logs, inspections, cover from the elements (weather), and spill PPE and equipment.

Slide 33:

Eyewash/deluge showers will be provided within 10 seconds and within 100 feet of travel distance for both long- (HWSA) and short-term (HWAP) storage facilities (in conformance with Emergency Eyewash and Shower Equipment, ANSI Standard Z 358.1-1981).

Slide 34:

All generally occupied areas (administrative, latrines, etc.) shall have positive-pressure ventilation in enclosed spaces. Negative pressure shall be maintained in all enclosed waste storage areas. Ventilation shall conform to OSHA Standard 1910.106 for flammable liquid vapors. Dehumidification of the air and exhausting the air to outside are recommended for storage areas containing materials that react with water or that have corrosive vapors, specifically the acid waste, and reactive waste storage areas. Storage and/or transfer areas containing materials hazardous to health shall be ventilated.

Slide 35:

Fire protection shall be provided as required by Construction Criteria Manual, DOD MIL-HDBK-1190. Since reactive wastes may react violently with water, the storage area for these wastes shall be protected by a gaseous-type system.

Slide 36:

The DLA Customer Handbook recommends these HW segregation categories for storage. Each category of waste should be separated from the others with secondary containment and a barrier and adequate spacing as already mentioned.

Slide 37:

When transporting HW, the vehicles should be properly placarded. As with HW accumulation, incompatibles should not be transported together or have a barrier to prevent contact. Stabilization of the containers is important, especially with rough roads, potential enemy fire, and accidents. The vehicle driver should be trained and have a list of what the cargo is in case of a spill or accident.

Slide 38:

Routine inspection requirements are specific to how the area is designated.

Requirements are the following:

- HWAP and all containers in any waste accumulation area must be inspected weekly by the designated person. Inspection items include tracking container return dates and noting the condition of each container and any secondary containment.

Visual inspections suffice, but inspections should be documented.

- HWSA must be inspected weekly by the designated person and the inspection must be documented and retained on record for three years to ensure that the area is under supervision.

Slide 39:

In addition to meeting all the requirements listed in Hazardous Waste: Hazardous Waste Management Requirements, the designated person in charge of a hazardous waste accumulation point must:

- Keep the area free of debris and trash and schedule housekeeping, as necessary.
- Pump rainwater out of secondary containment immediately. If the rainwater has become contaminated, it will need to be evaluated to determine the proper disposal method.

- Inspect all containers labeled "hazardous waste" for leaks. If a leak is found, immediately arrange a spill cleaned in accordance with the unit SOP.

- Verify that the safety equipment remains functional and that safety information is current.

Slide 40:

Each hazardous waste collection area must be included in a facility emergency plan (FEP); if a collection area is not included in any building FEP, an individual plan must be prepared and made available.

Slide 41:

Response to Releases

If a release is discovered during an inspection, the owner or operator must remove the affected portion of the unit from service and take all appropriate steps for repair and release containment. The implementing agency must be notified of the discovery and of the proposed schedule for repair. Upon completion of all necessary repairs and cleanup, a qualified, registered, professional engineer must verify that the plan submitted to the implementing agency was followed. This verification need not come from an independent engineer.

Absorbent Material for Spills. All facilities shall maintain an adequate supply of compatible absorbent material for application to liquid spills and leaks. Sufficient storage area shall be provided for absorbent material.

Slide 42:

When managing waste, an integrated management system is ideal. This is not always possible in a combat or even a sustainment environment; however, you should work to

follow the hierarchy as much as possible.

Avoidance or minimization – If you can avoid generating a waste or minimize hazardous waste, the less you have to deal with. An example includes using citrus-based solvents in place of hazardous solvents.

Reuse, Recycle, and Reduce – An example of reuse is taking a material that has been used in a process and returning it to the same process without any additional action on the material. Another side of reuse is reclamation. A material is reclaimed if it is processed to recover a usable product or if it is regenerated as is seen with used antifreeze. NOTE on REUSE: options include distributing to local populations which can only be done with pre-approval from AOR Environmental Office. An example of recycling is using an oil/fuel blender or processing used antifreeze instead of using new product. An example of reduce is using recyclable materials or buying products in bulk packaging to reduce the amount of packaging materials that will require disposal.

Treatment – In CONUS, treatment processes such as incinerating or neutralization often require permits. When OCONUS, treatment may be less regulated and a good option for managing waste. An example would be the neutralization of an acid or base.

Disposal is the most expensive waste management option (long-term).

Check on Learning:

HWAP and all containers in any waste accumulation area are to be inspected _____by the designated person?

What must occur before you can pump rainwater out of secondary containment?

How much headspace should be allowed for the expansion of liquids in a 55-gallon drum in a hot climate?

How much aisle space is required between containers to allow for fire fighting equipment?

Review Summary:

Good operation of the HWAP is key in protecting our troops and the environment. If you are uncertain about an aspect of HW storage, then contact an environmental protection specialist at your DPW for assistance.

CHECK ON LEARNING (ELO D):

HWAP and all containers in any waste accumulation area are to be inspected _____by the designated person?

What must occur before you can pump rainwater out of secondary containment?

How much headspace should be allowed for the expansion of liquids in a 55-gallon drum in a hot climate?

How much aisle space is required between containers to allow for fire fighting equipment?

REVIEW SUMMARY(ELO D):

Good operation of the HWAP is key in protecting our troops and the environment. If you are uncertain about an aspect of HW storage, then contact an environmental protection specialist at your DPW for assistance.

SECTION IV. SUMMARY

Method of Instruction:	Oral Presentation
Instr Type(I:S Ratio/Qty):	Instructor Qualified SME(1:24/0)
Time of Instruction:	5 mins
Instructional Strategy:	Small Group Instruction

Check on Learning

What are the 3 major steps in establishing a HWAP? 1) Planning and Site selection; 2) Design and Construction Standards; 3) Operation; and 4) Closure (which was not discussed in this lesson).

Review/ Summary

This lesson was designed to give you the information to construct a HWAP to the plans and specifications within a prescribed period of time. We covered planning, siting, design and construction, and operation.

SECTION V. STUDENT EVALUATION

Testing Requirements

NOTE: Describe how the student must demonstrate the accomplishment of the TLO. Refer student to the Student Evaluation Plan.

Feedback Requirements

NOTE: Feedback is essential to effective learning. Schedule and provide feedback on the evaluation and any information to help answer students' questions about the test. Provide remedial training as needed.

Appendix A - Viewgraph Masters

**Establish a Unit Hazardous Waste Accumulation Point
05-2-7500 / Version 1**

Sequence	Media Name	Media Type
None		

Appendix B - Test(s) and Test Solution(s)

Appendix C - Practical Exercises and Solutions

PRACTICAL EXERCISE(S)/SOLUTION(S) FOR LESSON 05-2-7500 Version 1

Appendix D - Student Handouts

**Establish a Unit Hazardous Waste Accumulation Point
05-2-7500 / Version 1**

Sequence	Media Name	Media Type
0	HWAP	PPTX
0	HWAP	PPTX

Appendix E - TRAINER'S LESSON OUTLINE

Establish a Unit Hazardous Waste Accumulation Point

05-2-7500 / Version 1

Effective Date: 17 February 2012

1. The importance of this lesson: (Why)

Establish a Hazardous Waste Accumulation Point (HWAP) that is constructed to the plans and specifications within the time frame prescribed in the mission directive.

2. What we want our Soldiers to Achieve: (Outcomes/Standard)

The element establishes a HWAP structure. The structure is constructed to the plans and specification within the time prescribed in the mission directive.

3. Tasks to be taught

<u>Task Number</u>	<u>Task Title</u>	<u>Task Type</u>
05-2-7500	Establish a Unit Hazardous Waste Accumulation Point	Collective SUPPORTED

Additional Non-Standard Tasks

None

4. References:

<u>Reference Number</u>	<u>Reference Title</u>	<u>Date</u>
40 CFR	Protection of the Environment	01 Jul 2006
FM 3-34.5	ENVIRONMENTAL CONSIDERATIONS	16 Feb 2010
PAM 710-7	HAZARDOUS MATERIAL MANAGEMENT PROGRAM	29 Jul 2007
TG 217	Technical Guide 217, Hazardous Material/Hazardous Waste Management Guidance for Maneuver Units During Field and Deployment Operations	02 Oct 2000
TM 38-410	STORAGE AND HANDLING OF HAZARDOUS MATERIALS {DLAM 4145.11; NAVSUP PUB 573; AFR 69-9; MCO 4450-12}	13 Jan 1999
UFC 4-451-10N	DESIGN: HAZARDOUS WASTE STORAGE	16 Jan 2004

Additional Non-Standard References

None

5. Resources

TIME: Time of Instruction (Time not specified)

LAND: Classroom, Training Area, and Range Requirements

<u>Id</u>	<u>Name</u>
17120-M-1200-30	Classroom, Multipurpose, 1200 Square Feet, 30 Students
17999	Training Area, Field

AMMO: Ammunition Requirements

<u>DODIC</u>	<u>Name</u>
None	

MISC: Materiel Items and TADSS Requirements

<u>Id</u>	<u>Name</u>
None	

Additional Non-Standard Resources

None

6. A possible technique to achieve the outcome:

None

7. Conduct AAR with Soldier and Cadre.

None

NOTE: Before presenting this lesson, Instructors must be thoroughly prepared by studying the appropriate lesson plan and identified reference material.