

React to a Hazardous Spill
05-2-7502 / Version 1
Effective Date 06 Jul 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>Individual</u>	
158-100-7015	Develop an Effective Team
158-100-4003	Communicate Effectively at the Direct Leadership Level
158-100-8006	Solve Problems Using the Military Problem Solving Process

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>
031-K-627-025	Knowledge of basic hazardous materials terms	Yes	Yes
031-K-627-105	Knowledge of unit Standard Operating Procedures (SOP) and location	Yes	Yes
052-K-00071	Knowledge of Chemicals	Yes	Yes
052-K-00249	State Environmental Laws	Yes	Yes
101-K-12	Knowledge of Material Safety Data Sheets (MSDS)	Yes	Yes
052-K-00780	Know How to Enforce the Clean Water Act (CWA)	Yes	Yes

Skill

<u>Skill Id</u>	<u>Title</u>	<u>Taught</u>	<u>Required</u>
805C-S-0031	Interpret and apply SOP	Yes	Yes
052-S-00170	Work while Wearing Rubber Protective Equipment	Yes	Yes
052-S-00293	Perform Risk Assessment and Mitigation	Yes	Yes
052-S-00440	Have the Ability to Identify Hazardous Practices and Materials on the Job Site	Yes	Yes
052-S-00464	Identify the Clean Water Act (CWA) Issues Within Your AO	Yes	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	0 hrs	25 mins	Demonstration/Performance
Yes	0 hrs	0 mins	Instructor/Facilitator
Yes	0 hrs	5 mins	Oral Presentation
Yes	0 hrs	20 mins	Practical Exercise (Hands-On)
Yes	0 hrs	0 mins	Test Review
Yes	0 hrs	0 mins	Test
<hr/>			
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	

**Training
Material
Classification**

Security Level: This course/lesson will present information that has a Security Classification of: U - 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>
FM 3-34.5	ENVIRONMENTAL CONSIDERATIONS	16 Feb 2010	
NIOSH 97-140	NIOSH Pocket Guide to Chemical Hazards (NPG)	01 Jan 2003	
TC 3-34.489	The Soldier and the Environment.	08 May 2001	
TM 38-410	STORAGE AND HANDLING OF HAZARDOUS MATERIALS {DLAM 4145.11; NAVSUP PUB 573; AFR 69-9; MCO 4450-12}	13 Jan 1999	

**Student Study
Assignment**

None

**Instructor
Requirements**

Lesson plan, power point slides for classroom training then PPE and Spill Kit for hands on practice.

**Additional
Support
Personnel
Requirements**

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

Equipment Required for Instruction	ID - Name	Student Ratio	Instructor Ratio	Spt	Qty	Exp
	4235-01-430-9662 - PATCH,SPILL CONTROL,DRUM	0:0	0:0	No	0	
	4235-01-432-7912 - Spill Clean-Up Kit, Hazardous Material	0:0	0:0	No	0	
	4240-01-292-2818 - Goggles, Industrial	0:0	0:0	No	0	
	8110-01-101-4055 - DRUM,HAZARDOUS MATERIAL DISPOSAL	0:0	0:0	No	0	
	8415-00-222-8074 - APRON,PLASTIC,DISPOSABLE	0:0	0:0	No	0	
	8415-00-266-8673 - GLOVES,RUBBER,INDUSTRIAL	0:0	0:0	No	0	
	8415-01-445-6565 - COVERALLS,DISPOSABLE	0:0	0:0	No	0	
	<i>(Note: Asterisk before ID indicates a TADSS.)</i>					

Materials Required

Instructor Materials:
References, TSP, area to train.

Student Materials:
Unit spill response plan or SOP.

Classroom, Training Area, and Range Requirements	ID - Name	Quantity	Student Ratio	Setup Mins	Cleanup Mins
	85710 Training Area Roads, Surfaced				
	85715 Training Area Roads, Unsurfaced				

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 Vargesco	Not available	Approver	06 Jul 2012

SECTION II. INTRODUCTION

Method of Instruction: Instructor/Facilitator
Instr Type(I:S Ratio/Qty):
Time of Instruction:
Instructional Strategy: Hands-On Instruction, Demonstrator

Motivator

You've spent hours of valuable training time training the unit spill response team. Now, with an accidental spill to deal with, you can see how well the training pays off.

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:	React to a Hazardous Spill
Conditions:	The unit is training at an installation training area during daylight hours. A minor vehicle accident during a convoy caused a spill of approximately 10 gallons of diesel on the asphalt road surface and 10 gallons of fuel on the dirt shoulder of the road. No one was injured in the accident.
Standards:	Take the correct actions based on the risks, location and unit capability to respond to a spill without impacting the mission.

Safety Requirements

In a training environment, leaders must perform a risk assessment in accordance with FM 5-19 Composite Risk Management. Soldiers need to have access to the correct Personal Protective Equipment (PPE) and contents of a spill kit to effectively react to a spill. Spill response need not be immediate in a combat environment, but when it is a safe time to respond if response is warranted. If the spill is on a busy road/highway, all possible safety precautions need to be considered.

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.

Are there any streams, storm sewers, or surface waters that can be impacted with this training?

Evaluation

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

Instructional Lead-in

Having a trained and ready spill team is a key component of an effective unit environmental program. Is your unit prepared for a spill response today? Who should be trained? All personnel who handle hazardous materials routinely should be cross trained as members of the spill team. You never can predict when a spill will occur and who will be present to react.

SECTION III. PRESENTATION

TLO - LSA 1. Learning Step / Activity TLO - LSA 1. Classroom Training

Method of Instruction: Oral Presentation

Instr Type(I:S Ratio/Qty):

Time of Instruction: 0 hrs 5 mins

Instructional Strategy: Lecture

Media Type: Computer Based Instruction

Security Classification: This course/lesson will present information that has a Security Classification of: U - Unclassified.

SHOW SLIDES # 3 REFERENCES, SLIDES 4/5/6 EQUIPMENT

SHOW SLIDE #7

WHAT IS THE HAZARDOUS MATERIAL? In this case it is diesel fuel. The Material Safety Data Sheet for diesel fuel should be discussed with respect to human hazards and first aid.

DISCUSS THE MSDS

SIZE OF THE SPILL This dictates whether cleanup is necessary. In this case, assume a spill of 5 gallons or less is not reportable and cleanup not required. So, our spill of twenty gallons requires cleanup.

QUICK RISK ASSESSMENT The NCOIC must do a quick CRM to determine if the unit has the training, equipment and capability to do the cleanup safely by themselves.

Check on Learning: What is the first thing to do when reacting to a hazardous spill?

Response: Protect Yourself

Review Summary: Whose responsible to keep spill kits serviceable?

TLO - LSA 2. Learning Step / Activity TLO - LSA 2. Describe Spill Drill SHOW SLIDE # 8

Method of Instruction: Demonstration/Performance

Instr Type(I:S Ratio/Qty):

Time of Instruction: 0 hrs 15 mins

Instructional Strategy: Group-Paced Instruction/Individualized, Self-Paced Instruction

Media Type: Unassigned

Security Classification: This course/lesson will present information that has a Security Classification of: U - Unclassified.

SLIDE # 9 SPILL TEAM

NCOIC - Knows the Spill Drill, trains the team, supervises the actual cleanup and

proper disposal of the hazardous materials.

CLEANUP PERSONNEL - All Soldiers in the unit who handle hazardous material (maintenance personnel, drivers) ought to be cross trained for the spill team. No one can predict when a spill will occur or what personnel will be present for the cleanup.

SLIDE # 10 PROTECT YOURSELF/REACT

SLIDE # 11

Assess the scene. What substance is spilled? How big is the spill? Is it still occurring and spreading?

Can you shut off the source? Can it get any larger and eventually reach water? Is it safe for me and my Soldiers to clean it up? Can we clean up the spill without adversely impacting our original mission?

SLIDES #12/13 DECISION

Is it safe for cleanup?

NO>Evacuate, secure the area, call for Help.

YES>Gather equipment and REACT

SLIDE # 14 REACT

Remove the source

Envelop the spill

Absorb/Accumulate

Containerize/cleanup

Tell your supervisor

SLIDE # 15

Remove the Source

Seal or overpack leaking barrels

Use drip pans and repair leaking vehicles

Tighten leaky hose connections

Close valves

Shut down power to pumps

SLIDE # 16

Envelop the Spill

Use absorbent pads and socks to stop the flow

Use absorbent booms to curb the spread. They will protect waterways/drains.
Use shovels and create a small dam

SLIDE # 17

Absorb/Accumulate

For spills on a hard surface like asphalt/concrete, use dry sweep
On mud/gravel/soil use absorbent pads

SLIDE # 18

Containerize/Clean

Place absorbent material into bag or container (drum)
Dig up soil and containerize for minor spills (less than 25 gallons)
Intermediate (25-55 gallons) and Major spills (more than 55 gallons)
require a larger cleanup team
Dispose of contaminated soil at an approved site

SLIDE # 19

Tell your supervisor

Minor Spills (What, when, where and how)

Intermediate or Major Spills (work with supervisor to transmit the report)

Reportable Spills (varies by installation/state)

Check on Learning: What does REACT stand for?

Review Summary: How deep into the soil must the cleanup go?

TLO - LSA 3. Learning Step / Activity TLO - LSA 3. Spill Report

Method of Instruction: Demonstration/Performance

Instr Type(I:S Ratio/Qty):

Time of Instruction: 0 hrs 10 mins

Instructional Strategy: Group-Paced Instruction/Individualized, Self-Paced
Instruction

Media Type: Unassigned

Security Classification: This course/lesson will present information that has a
Security Classification of: U - Unclassified.

SLIDE # 20

Contact Information

Date/time group and location of spill

What and how much was spilled?

What action was taken?

What damage occurred?

What additional assistance/action is needed?

SLIDES # 21/22

Spill Report Example

- LINE 1 Date/Time Group
- LINE 2 Reporting Unit
- LINE 2A Point of Contact
- LINE 2B Email Address
- LINE 3 DTG of Spill Discovery
- LINE 3A DTG of Spill
- LINE 4 Material Spilled
- LINE 5 Quantity Spilled (gallons)
- LINE 5A Type of Surface
- LINE 5B Was spill contained
- LINE 6 Location (Latitude/Longitude)
- LINE 6A Base Camp Name
- LINE 7 Cause?
- LINE 8 Affected area in square feet
- LINE 9 Hazards to the environment?
- LINE 10 Hazards to personnel
- LINE 11 Actions Taken
- LINE 12 Responsible Unit
- LINE 12A Responsible POC
- LINE 12B Responsible POC Email
- LINE 12C Responsible POC Phone
- LINE 13 Assistance Needed
- LINE 14 Narrative Summary of Actions

Check on Learning: SHOW SLIDE #23

Describe the Spill Drill
Prerequisites
Spill Response
Protect Yourself
REACT
Proper Disposal

Review Summary: Discuss SLIDES 24 through 28 as job aids

SECTION IV. SUMMARY

Method of Instruction:	Practical Exercise (Hands-On)
Instr Type(I:S Ratio/Qty):	None
Time of Instruction:	0
Instructional Strategy:	Small Group Instruction

Check on Learning

Why do we need to bother with cleaning up this diesel spill?

Response: State/Installation/Host Nation laws; protect the watershed.

Review/ Summary

What is a "reportable" spill size at this installation?

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

**React to a Hazardous Spill
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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 05-2-7502 Version 1

PRACTICAL EXERCISE SHEET 05-2-7502 PE1

Title Spill Drill Practice

Lesson Number/Title 05-2-7502 Version 1 / React to a Hazardous Spill

Security Classification Unclassified

Introduction The instructor moves the students outside for the practical exercise and takes the training aids along. Instructor has twenty gallons of soapy water in five gallon cans to simulate the spill. Instructor spills the water on the asphalt and dirt shoulder next to the asphalt. Instructor designates a spill team leader.

Motivator You are now at the spill site and have had the classroom training, you have the PPE and the spill kit, and must respond to a twenty gallon spill. Spill team leader, take action.

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:	React to a Hazardous Spill
Conditions:	The unit is training at an installation training area during daylight hours. A minor vehicle accident during a convoy caused a spill of approximately 10 gallons of diesel on the asphalt road surface and 10 gallons of fuel on the dirt shoulder of the road. No one was injured in the accident.
Standards:	Take the correct actions based on the risks, location and unit capability to respond to a spill without impacting the mission.

Safety Requirements Ensure the weather is conducive to good training and the site is free from traffic that might cause a training hazard.

Risk Assessment Level None

Environmental Considerations **NOTE:** Instructor should conduct a Risk Assessment to include Environmental Considerations IAW FM 3-100.4, Environmental Considerations in Military Operations, Appendix G, and ensure students are briefed on hazards and control measures.

Instructor should conduct a Risk Assessment to include Environmental Considerations FM 3-34.5, Environmental Considerations and ensure students are briefed on hazards and control measures.

Evaluation Conduct AAR to evaluate how the spill team, and leader, performed. How might they have done it differently or more efficiently? What if they were on a busy road, how might they have

conducted the cleanup?

**Instructional
Lead-in**

Instructor explains the scenario, and that based on installation regulations, state and federal Clean Water Act, directs the spill team to clean up the spill.

**Resource
Requirements**

Instructor Materials:

Communications (radio, cell phone), lesson plan, spill SOP for the installation, state regulations. CRM checklist. Combat lifesaver and first aid kit, wet bulb.

Student Materials:

Water, clothing appropriate for the weather.

**Special
Instructions**

Conduct outside in a safe training area that includes some asphalt and a dirt shoulder. Cannot conduct this drill during inclement weather since the simulated diesel is soapy water and would be washed away in rain or snow.

Procedures

Assemble the class into spill teams of 5 Soldiers, give one team the PPE and spill kit, prepare the area with a simulated diesel spill (twenty gallons of soapy water), and watch the first team take action. Designate a team leader and tell the team leader to describe verbally what is to be done and guide the team through doing it. The instructor does not offer any help during the PE. The other teams observe. AAR is conducted afterward by instructor and the team. The other teams listen and learn so when it is their turn, they should do better.

**Feedback
Requirements**

Was the spill site cleaned adequately? Were Soldiers protected throughout? Where does the contaminated materials go for proper disposal on this installation? What if this were an off post event? How does the location of the spill dictate cleanup procedures?

**SOLUTION FOR
PRACTICAL EXERCISE 05-2-7502 PE1**

Spill team leader directs the actions of the spill team, puts members in PPE, uses the spill kit to absorb the soapy water off the asphalt, team digs up the soaked dirt and puts in empty drum.

Upon completion, spill team leader submits a verbal spill report to instructor.

Appendix D - Student Handouts

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Sequence	Media Name	Media Type
0	Diesel Fuel MSDS	DOC
0	Diesel MSDS	PDF

Appendix E - TRAINER'S LESSON OUTLINE

React to a Hazardous Spill

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Effective Date: 06 July 2012

1. The importance of this lesson: (Why)

Reacting to a hazardous spill is a common task for all units that operate with unit vehicular equipment.

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

Take the correct actions based on the risks, location and unit capability to properly clean up the spill without impacting mission accomplishment.

3. Tasks to be taught

<u>Task Number</u>	<u>Task Title</u>	<u>Task Type</u>
158-100-7015	Develop an Effective Team	Individual SUPPORTED
158-100-4003	Communicate Effectively at the Direct Leadership Level	Individual SUPPORTED
158-100-8006	Solve Problems Using the Military Problem Solving Process	Individual SUPPORTED

Additional Non-Standard Tasks

None

4. References:

<u>Reference Number</u>	<u>Reference Title</u>	<u>Date</u>
FM 3-34.5	ENVIRONMENTAL CONSIDERATIONS	16 Feb 2010
NIOSH 97-140	NIOSH Pocket Guide to Chemical Hazards (NPG)	01 Jan 2003
TC 3-34.489	The Soldier and the Environment.	08 May 2001
TM 38-410	STORAGE AND HANDLING OF HAZARDOUS MATERIALS {DLAM 4145.11; NAVSUP PUB 573; AFR 69-9; MCO 4450-12}	13 Jan 1999

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>
85710	Training Area Roads, Surfaced
85715	Training Area Roads, Unsurfaced

AMMO: Ammunition Requirements

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

MISC: Materiel Items and TADSS Requirements

<u>Id</u>	<u>Name</u>
4235-01-430-9662	PATCH,SPILL CONTROL,DRUM
4235-01-432-7912	Spill Clean-Up Kit, Hazardous Material
4240-01-292-2818	Goggles, Industrial
8110-01-101-4055	DRUM,HAZARDOUS MATERIAL DISPOSAL
8415-00-222-8074	APRON,PLASTIC,DISPOSABLE
8415-00-266-8673	GLOVES,RUBBER,INDUSTRIAL
8415-01-445-6565	COVERALLS,DISPOSABLE

(Note: Asterisk before ID indicates a TADSS.)

Additional Non-Standard Resources

None

6. A possible technique to achieve the outcome:

None

7. Conduct AAR with Soldier and Cadre.

What went right, what went wrong, how can it be done better next time?

What if conditions change?

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