



Emergency Response Refresher - Performance Measures

Participant Guide

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Midwest Consortium for Hazardous Waste Worker Training

Acknowledgement

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We encourage you to comment on these materials. Please give your suggestions to those teaching the program in which you are now enrolled or click on 'contact us' at <https://mwc.umn.edu>.

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Disclaimer

The Occupational Safety and Health Administration (OSHA) rule to help assure worker health and safety at hazardous materials responses requires annual refresher training. Refresher training requirements are specified in 29 CFR 1910.120(q)(8). This program is intended to help meet the requirements for knowledge and skills that the employer must certify annually.

Additional training is necessary to perform many activities. These activities include developing an emergency response plan, identifying materials using monitoring instruments, selecting protective equipment, and assuming the role of incident commander. For information about this matter, consult the training facilitator and/or your company emergency response plan or your company health and safety representative.

Content was updated September 11, 2023 and all web links are active as of that date; If you find an error, please inform those leading the course.

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Introduction

This program has been developed for members of an emergency response team that may have to respond to an incident involving a hazardous materials release.

At the operations-level a responder has been trained to respond to an incident in a defensive fashion without actually trying to stop the release. At the technician-level a responder has been trained to respond to the point of the release to stop the release. During this refresher program, you will participate at the level of your training.

During this program you will update skills regarding:

- Using hazardous materials terms to describe chemical hazards
- Possible outcomes of an emergency
- Your role as a responder
- The need for other resources
- Basic hazard and risk assessment techniques
- Selecting and using proper protective equipment provided
- Basic control containment procedures
- Basic decontamination procedures
- Standard operating guides and standard operating procedures
- Incident termination

Objectives

After completing this program, you will be better able to:

- Size up a scene
- Work within the system set up for response actions
- Use personal protective equipment (PPE)
- Perform response actions appropriate for your level of training

Training Requirements of HAZWOPER

Below is a summary of the training requirements for several levels of emergency responder competencies:

Awareness Level (report a release):

- Understand hazardous materials and associated risks
- Understand potential outcomes of emergencies
- Have the ability to recognize hazardous materials
- Identify hazardous materials if possible
- Understand the role of the emergency responder
- Have the ability to contact appropriate personnel

Operations Level (act defensively, away from release):

- Fulfill requirements of Awareness Level
- Know basic hazard and risk assessment techniques
- Select and use proper personal protective equipment that is provided
- Know basic hazardous materials terms
- Know basic control, containment, and/or confinement operations
- Know basic decontamination
- Understand relevant standard operating procedures
- Know termination procedures

Technician Level (offensive actions to stop a release):

- Have fulfilled requirements of Awareness and Operations levels
- Able to implement an emergency response plan
- Can identify, classify, and verify materials using air monitoring instruments and field survey techniques
- Know toxicological terms and behaviors
- Can perform advanced control, containment, and/or confinement operations
- Able to select and decontaminate personal protective equipment
- Understand risk assessment and incident command
- Understand and can implement termination procedures

Incident Commander (person who leads response):

- Have fulfilled requirements of Operations level
- Able to implement incident command system and emergency response plan
- Understand hazards for employees working in personal protective equipment
- Know the state emergency response plan and the federal regional response team plan
- Understand the importance of decontamination procedures

Response activities are organized according to the Emergency Response Plan (ERP). OSHA 1910.120(q)(2) is a list of elements that must be included in the ERP:

- Pre-emergency planning and coordination with outside parties
- Personnel roles, lines of authority, training, and communication
- Emergency recognition and prevention
- Safe distances and places of refuge
- Site security and control
- Evacuation routes and procedures
- Decontamination
- Emergency medical treatment and First Aid
- Emergency alerting and response procedures
- Critique of response and follow-up
- Personal protective equipment and emergency equipment

Employers must have an ERP that consists of hazard assessment and Standard Operating Procedures (SOP) to be used in a response. Because the SOPs generally are site- or company-specific, generic guidelines or Standard Operating Guides (SOG) is the term used here. The facilitator may use your company-specific SOPs, when available.

Strategic Goals for Four Phases of a Response

Goals for Initial Actions (Life Safety)

- Notification: IC identified and command initiated
- Identification: Hazard material information and assessment
- Isolation: Controlling entry to affected area
- Protection: PPE and monitoring goals for tactical actions

Goals for Tactical Operations (Planning)

- Hazard Reduction: The process by which the exposure to toxic materials is either reduced or completely eliminated.
- Spill Control: The process by which the spread of a product through the environment is either limited or completely stopped.
- Leak Control: The process by which a breach or failure of a container is either directly or indirectly controlled.
- Fire Control: The process by which the potential impact of a fire is minimized or controlled.

Goals for Sustained Actions (Response)

- Entry briefing: Plan is described and assignments made
- Use appropriate PPE: Checkout and use appropriate PPE for the task
- Confine/Contain release: Perform the assigned task
- Decon: Assure no spread of contamination by using appropriate decon procedures

Goals for Termination (Property Conservation, Review)

- Termination
- Recovery

We want you to participate in the program. Please ask questions about anything that you do not understand and/or anything you would like to have discussed in more detail.

Throughout the program, you will use an exposure scenario provided by the facilitator. As you complete each phase of the response, you will document your activities by completing performance checklists.

Response Phases

Initial Actions

Plan Development

Sustained Actions

Termination

Successful completion of this program requires the following:

- Attendance for the entire program
- $\geq 70\%$ on Hazardous Materials Fact Sheet
- 100% completion of Performance Measure Checklist, shown below

Performance Measure Checklist

Below is the Performance Measure Checklist that will be used as part of the evaluation of your skills at the end of this program.

	Yes	No	N/A	Facilitator Comments
CPC Selection				
Selected the correct CPC for hazard				
Respirator Selection				
Selected the correct respiratory protection for hazard				
CPC Don/Doff				
Correctly checked CPC for tears and other flaws				
Made pull-tabs for buddy				
Did not touch outside of suit when it was being removed				
Respirator Donning				
Correctly inspected the respirator valve(s)				
Correctly performed a user seal check				
Correctly adjusted straps				
Decon				
Always moved toward cleaner area				
Correctly removed inner gloves at end of decon				
Deposited contaminated equipment in proper container				

Confinement				
Selected correct control method and materials				
Worked to minimize contamination				
Visually verified confinement effectiveness				
Resupply				
Identified one item that needed to be resupplied				

Other checklists will be used throughout the program to chart important steps in a response.

Summary - Introduction

Refresher training skills are matched to initial training level

There are four phases to an organized response:

- Initial Actions
- Plan Development
- Sustained Actions
- Termination

Initial Actions

By implementing pre-planned steps in a response to hazardous materials incidents when a release occurs, you can protect the health and safety of response personnel. Also, using a pre-planned response helps to ensure the operation begins efficiently. If the incident begins with chaos and lack of organization the situation will have a tendency to worsen and people will get hurt.

Objectives

After completing this section, you will better be able to:

- Implement the initial action step according to the Standard Operating Guide (SOG)
- Use a Safety Data Sheet (SDS) and the Emergency Response Guidebook to gather basic hazardous materials information
- Conduct a hazard assessment for the hazardous material released
- Determine the appropriate distances, zones and staging area
- Identify personal protective equipment and air monitoring equipment

Activity 1 - Notification

Purpose: To practice the notification step at a hazardous materials scenario.

Directions: Your facilitator will provide background about the hazmat incident that has occurred. Assume that your team is responding to the incident and answer the questions below.

Performance Skills Checklist

Activity	Yes	No
PRIOR TO HAZMAT TEAM		
1) Did you identify the Incident Commander (IC)?		
2) Did the IC identify the command location?		
3) Did the IC describe the following?		
a) Type of incident		
b) Type of hazardous material		
c) Number and type of injuries		
d) Initial action taking place		
AFTER HAZMAT TEAM		
4) Did the IC make the following primary assignments?		
a) Identification (Research)		
b) Isolation (Security Eng. Controls Zones)		
c) Protection (PPE, Staging)		
5) Did the IC make the following notifications?		
a) Internal		
b) External		

Activity 2 - Basic Hazardous Materials Terms

Purpose: To practice the gathering information and use basic hazardous materials terms.

Directions: Your facilitator will provide you with resources and a list of information to find. Complete the Fact Sheet on the next page.

Hazardous Materials Fact Sheet

Shipping Name _____

DOT Hazard Class _____

UN Number/Guide Number _____

Odor Threshold _____

Solubility in water _____

Specific Gravity _____ Vapor Density _____

Vapor Pressure _____ pH _____

Flash point/LEL/UEL _____

Incompatible Materials _____

Hazardous Decomposition Products _____

Routes of Exposure _____

Acute Effects _____

Chronic Effects _____

PEL/STEL/IDLH _____

Hazard Statement _____

Signal Word _____

Activity 3 – Hazard Assessment

Purpose: To practice performing a hazard assessment at a hazardous materials release scenario

Directions: Using the Hazardous Materials Fact Sheet, answer the following questions.

Performance Skills Checklist

Activity	Yes	No
Did you list...		
DOT Hazard Class		
UN Number		
Odor threshold		
Flash Point		
LEL		
pH		
Incompatible materials		
Hazardous decomposition products		
Did you identify ...		
Inhalation hazards		
Acute health effects		
Chronic health effects		
PEL/STEL and IDLH		
Hazard Statement		
Signal Word		

Activity 4 - Isolation

Purpose: To practice the isolation step at a hazardous materials scenario

Directions: Given a hazardous materials scenario and map, answer the following questions

Performance Skills Checklist

Activity	Yes	No
1) Did you determine the following zones?		
a) Hot		
b) Warm		
c) Cold		
2) Did you establish a staging area?		
3) Did you establish an evacuation area?		

Activity 5 – PPE and Air Monitoring Selection

Purpose: To practice selecting Personal Protective Equipment (PPE) for a hazardous materials scenario.

Directions: Given a hazardous materials scenario, answer the questions for the table on the following page.

Performance Skills Checklist

1. What level of protection did you select for a needed role?

Level A for _____(insert role)

Level B for _____(insert role)

Level C for _____(insert role)

Level D for _____(insert role)

2. What CPC/RPE did you select? List the Brand for any selected item

Body _____

Respirator/cartridge _____

Gloves

Inner _____

Middle _____

Outer _____

Foot _____

3. What type of monitoring equipment did you select?

pH Yes No

4-gas monitor Yes No

Detector/colorimetric tube Yes No

Single-gas monitor..... Yes No

Other (specify)..... Yes No

Summary – Initial Actions

During this section, you used an SOG and resources to conduct

- Notification
- Information gathering for Hazardous Materials Terms
- Hazard Assessment
- Isolation
- Protection (PPE and Air Monitoring)

Why is each step important?

PLAN DEVELOPMENT

If you are unable to lessen the incident during the Initial Actions phase, a more sustained response will be necessary. However, before becoming more involved, the Incident Commander must develop a response plan in order to comply with OSHA requirements; this may be a modification of what is in the ERP based on current conditions. Most importantly, the development of a response plan will help to ensure employee safety.

Objectives

After completing this section, you will better be able to:

- Identify the components of the Plan Development Phase
- Identify the tactical operations for a hazardous material incident according to the SOG
- Identify resources used to support the hazardous materials incident control plan according to the SOG
- Identify the job assignments made to support the hazardous materials incident control plan according to the SOG

Hazard Reduction

- Ventilate
- Neutralize
- Dilute
- Disperse Vapor

Spill Control (Confinement, Operations-level participants)

- Blanket
- Dissolve
- Absorb
- Boom
- Divert
- Retain
- Suppress Vapor
- Dam
- Block Drain
- Collect in Containers

Leak Control (Containment, Technician-level participants)

- Plug
- Patch
- Overpack
- Valve
- Clamp

Fire Control

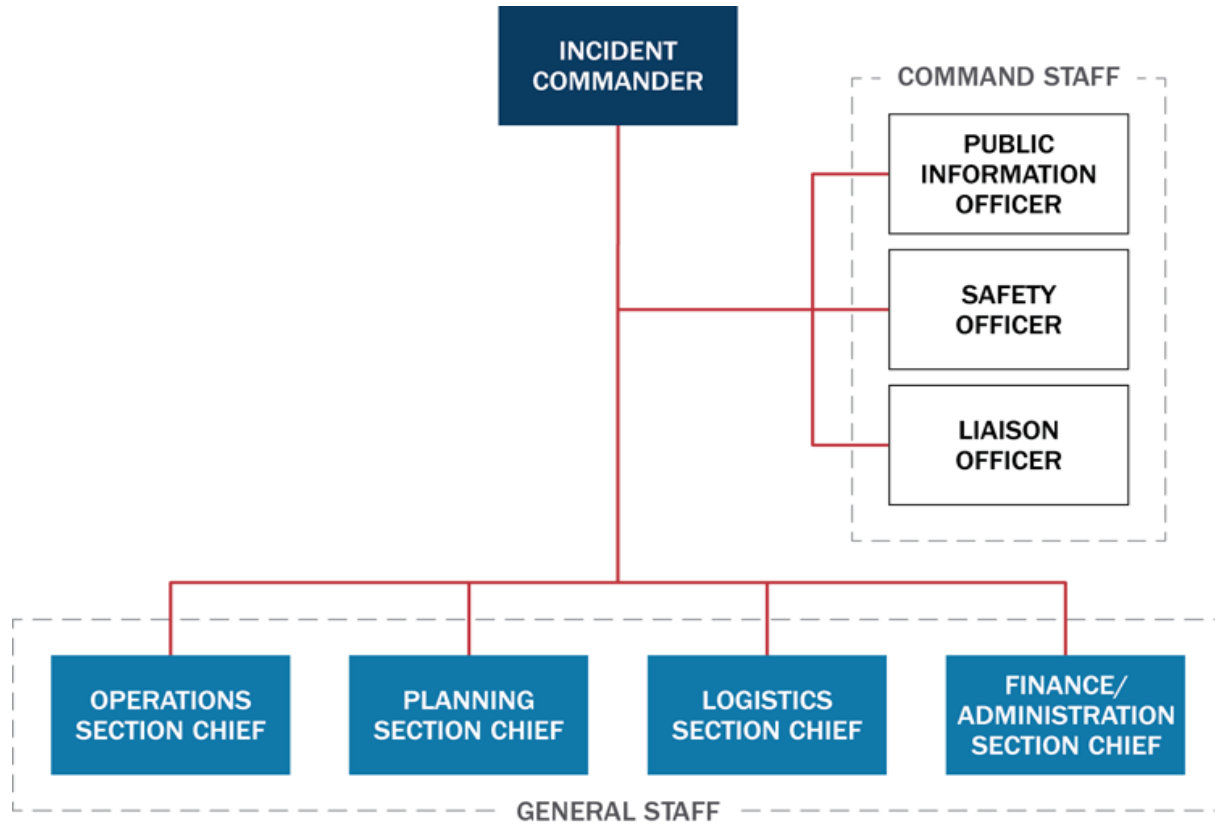
- Drum Storage
- Bond
- Ground

Resources

- Personnel
- Equipment

Job Assignments

The Incident Command is organized according to the following figure:



Source: <https://training.fema.gov/nims/>

Activity – Plan Development

Purpose: To practice the plan development step at a hazardous materials incident scenario

Directions: Given a hazardous materials incident scenario, answer the questions below

Performance Skills Checklist

1) What goals were selected for this incident?

a) Spill Control _____

b) Leak Control _____

c) Fire Control _____

2) List the tactical operations that were performed for this incident

	Yes	No
3) Were the following resources evaluated?		
a) Personnel		
b) Equipment		
4) What jobs were assigned during this incident?		
a) Incident Command and Command Staff		
b) Safety		
c) Decontamination		
d) Entry		
e) Back-up		
f) Research		
g) Site Control		
h) Dress-Out		

Summary – Plan Development

During this section of phases of Plan Development, you used the SOG to identify:

- Goals
- Tactical Operations
- Resources
- Job Assignments

Briefly, what does each step involve?

Sustained Actions

Sustained actions are conducted according to the Plan developed by the Incident Commander. During sustained actions, response personnel can get hurt if the incident is not managed properly. The Incident Commander is responsible for ensuring the safety of responders during sustained actions.

Objectives

After completing this section, you will better be able to:

- Demonstrate tasks implemented for the sustained action step according to the Standard Operating Guide (SOG)
- Identify elements of an entry briefing
- Don and doff personal protective equipment according to the SOG
- Demonstrate confinement or containment techniques for a HAZMAT scenario, depending on training level
- Demonstrate basic decontamination procedures

Activity 1 – Entry Briefing

Purpose: To discuss the elements of an entry briefing

Directions: Your facilitator will set up the scenario involving a hazardous material at your facility or in the community. Each person will perform an activity as a member of the entry team and the decon team. Prior to implementing the response to the scenario you will review procedures for proper use of an APR/SCBA or SAR. Working with participants, the facilitator will demonstrate the donning, doffing, and decontamination procedures contained in the SOG. Your facilitator will discuss the elements of an entry briefing prior to conducting this exercise.

Performance Skills Checklist

Activity	Yes	No
1) Were you part of an entry briefing that covered the following?		
a) Emergency signals		
b) Communications		
c) Tasks		
d) Hazards		
e) Site Details		
2) Did you complete the following before initiating tasks?		
a) Review approval from Incident Commander		
b) Entry team ready to go		
c) Verify decontamination line is ready		
3) Was the need to evaluate the effectiveness of the response action included in the briefing?		

Activity 2 - Donning/Doffing PPE

Purpose: To practice donning and doffing PPE for hazardous materials response

Directions: You will be given a PPE ensemble. Don it according to the instructions provided. Complete the checklist below at the conclusion of the incident response.

Suit Manufacturer: _____ Size: _____

Respirator Manufacturer and Type:

Glove Manufacturer and Type:

Boot Manufacturer: _____ Size: _____

Level of Protection:

Performance Skills Checklist

Activity	Yes	No
1) Did you inspect the PPE before donning it?		
2) Did your buddy make pull tabs when taping boots, pants, gloves and sleeves?		
3) Did you perform a negative-pressure check of your respirator facepiece?		
4) Did your buddy review the communications system you would use?		
5) Did you don the PPE ensemble completely using a SOG?		
6) Did you receive a pre-entry briefing?		
7) Did you perform an assigned task within the scope of your training?		
8) Did you touch the outside of your suit while it was being removed?		
9) Did you properly remove your inner gloves?		

Activity 3 - Confinement

Purpose: To practice confinement skills at the Operations-level (or Containment at the Technician-level)

Directions: Your facilitator will assign you to confine or contain a product based on your level of training and the materials and equipment provided. When you have completed the task, complete the checklist below.

Performance Skills Checklist

Activity	Yes	No
1) Did you select the proper PPE?		
2) Did you identify the type of release? Level measured		
a) Air		
b) Water		
c) Land		
3) Did you estimate the volume of product? Amount		
4) Indicate the control methods used		
a) Absorb		
b) Dike		
c) Dam		
d) Divert		
e) Retain		

Sustained Actions

Activity	Yes	No
f) Dilute		
g) Disperse Vapor		
h) Suppress Vapor		
i) Block Drain		
j) Neutralize		
5) Did you work in a manner to minimize contamination?		
6) Did you visually verify confinement/containment effectiveness?		
7) Did you use a detection device to verify confinement or containment?		
8) Did you use a remote shut-off device as a method of containment?		
9) Did you approach the point of emission and stop the release?		

Activity 4 - Decontamination

Purpose: To practice decontaminating equipment and chemical-protective clothing

Directions: Your facilitator will provide PPE and decon equipment. You will practice decontamination procedures using a SOG. When the decontamination exercise is over, complete the checklist below.

Performance Skills Checklist

Activity	Yes	No
1) Was all necessary decontamination equipment available?		
2) Was the decontamination line appropriate for the contaminant?		
3) Was one person in charge of the decontamination line at all times?		
4) As a member of a team, did you assemble a decontamination line?		
5) Did personnel going through decontamination always move towards cleaner areas?		
6) Were decontamination workers wearing appropriate levels of protection?		
7) Were personnel decontaminated according to the steps listed in the Standard Operating Guidelines?		
8) Did the decontamination team decontaminate themselves before leaving the area?		
9) Were contaminated materials and equipment disposed of properly?		

Summary - Sustained Actions

These activities were an opportunity to confine the release according to the SOG. The parts of this section on Sustained Action are:

- Entry Briefing
- Donning and Doffing PPE
- Confinement
- Decontamination

Briefly, what does each step involve?

Termination

After the initial actions are in place, you implemented a plan to stabilize the incident.

The sustained action phase was the exciting part of the response.

In this section we will work on termination procedures. It is during the termination phase that responders may let their guard down, and this can affect the next response. It is also a time to learn from the actions taken in this response. We will also examine ways to maintain equipment

Objectives

After completing this section, you will better be able to:

- Demonstrate participation in the termination step according to the Standard Operating Guide
- Identify the elements of the termination phase as it applies to personnel
- Identify site transfer procedures
- Resupply equipment used in the scenario
- Conduct a final inventory of equipment

Termination Actions

Refer to the SOG to identify personnel who complete:

- Personnel Accountability Report (PAR)
- Rehabilitation (Rehab)
- Post Incident Analysis (PIA)
- Critical Incident Stress Debriefing (CISD)

Discuss how each of these reports will be useful going forward for the entire team. How will the after-action updates be shared? Is practice needed?

Other documentation needed in Termination includes:

Site transfer

Discuss how you knew when the control of the site changed?

Assess and resupply of equipment

Identify any equipment deficiencies. To whom are these deficiencies reported?

How is resupply accomplished according the SOG?

Final Inventory of Equipment

After resupply, is the inventory complete? Who is responsible?

Activity - Resupply and Inventory

Purpose: To practice the resupply and inventory component of a hazardous material scenario

Directions: At the conclusion of the HAZMAT scenario your facilitator will provide directions regarding resupplying equipment and conducting an inventory. When the activity is completed, fill out the checklist below.

Performance Skills Checklist

Activity	Yes	No
1) Did you resupply equipment in the PPE boxes?		
a) Suit		
b) Gloves		
c) Boots		
d) Hard Hat		
e) Tape		
f) Decon Bags/Pads		
2) Did you inspect the following equipment before closing the		
a) Suit		
b) Gloves		
i) Outer		
ii) Middle		
iii) Inner		
c) Boots		

d) Hard Hat		
e) Tape		
f) Decon Bags/Pads		
i) Block Drain:		
j) Neutralize		
3) Was the decon line disassembled?		
4) Were all extra boxes inspected?		
5) Were all materials and equipment returned to the van or		

Summary - Termination

Steps during termination include:

- Personnel assignments
- Site transfer
- Resupply of equipment
- Inventory of equipment

Why is each of these steps important?

Closing and Program Evaluation

Thank you for participating in this program. The overall goals will better prepare you to:

- Size up a scene
- Work within the system set up for response actions
- Use protective equipment
- Perform response actions appropriate for your level of training

Please ask any remaining questions.

In order to improve the program and meet your needs with any further training, it is most appreciated if you take a few minutes complete this evaluation form.

Thank you.