



# **Hazardous Waste Site Worker Refresher- Performance Measures**

## **Participant Guide**

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Midwest Consortium for Hazardous Waste Worker Training

## **Acknowledgments**

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The Midwest Consortium developed this program for Hazardous Waste Worker Training under cooperative agreement number U45 ES 06184 from the National Institute of Environmental Health Sciences. We encourage you to comment on these materials. Please give your suggestions to those leading the program in which you are now enrolled or click on 'contact' at <https://mwc.umn.edu/>.

## **Warning**

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The Midwest Consortium has copyrighted this material. A recipient of the material, other than the Federal Government, may not reproduce it without permission of the copyright owner. The material was prepared for use by instructors experienced in the training of persons who are or who anticipate being employed at a hazardous waste worksite. Authors of this material have prepared it for the training of this category of workers as of the date specified on the title page. Users are cautioned that the subject is constantly evolving. Therefore, the material may require additions, deletions, or modifications to incorporate the effects of that evolution occurring after the date of this material preparation.

## **Disclaimer**

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The Occupational Safety and Health Administration (OSHA) rule to help assure worker health and safety at hazardous waste sites requires annual refresher training for those working on hazardous waste sites. Refresher training requirements are specified in 29 CFR 1910.120(e)(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 implementing the emergency response plan, identifying materials using monitoring instruments, selecting protective equipment, and performing advanced control, containment or confinement. Additional site-specific training for emergency response must be provided so that you understand how to recognize and respond to alarms at the site and can carry out any role which may be assigned during a response.

For information about this matter, consult the training instructor and/or your company safety and health plan or your company health and safety representative.

This content was updated on May 21, 2024 and all web links were active as of that date; if you find an error, please inform the facilitator so that it can be updated.

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## **Introduction**

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You are here because you have been employed at a hazardous waste site and you have already received the 40-hour introductory training and the three days of onsite training provided by the employer. This program is designed to meet the annual refresher training requirement in 29 CFR 1910.120 (e) (8) of the Hazardous Waste Operations and Emergency Response Standard.

Goals for this program are to:

- Review basic skills and knowledge about hazardous waste site work
- Provide updates on standards/regulations, new technology and equipment
- Engage in learning and problem-solving activities to improve safety and health conditions on a site
- Reinforce safe work practices
- Reinforce the role of personal protective equipment on a site
- Reinforce the importance of a site-specific safety and health plan in controlling hazards

## **Agenda**

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The facilitator will review the agenda for the day. A full eight hours of training is required, so lunch and break times do not count as training time.

Checklists are used to document skills correctly applied during the program and are part of successfully completing the refresher. Blank copies of each checklist will be provided to you, so that you do not have to use the ones in the manual. You will complete and return the checklists to the facilitator.

### **Successful Completion for this program requires the following:**

- Attendance for the entire program
- 100% Activities Performance Skills Checklists
- $\geq 70\%$  on Hazardous Material Fact Sheets

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.

## **Getting Ready – Hazard Assessment and Control**

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Your experience is important to training. Since your initial training or the last refresher, you have had many experiences and observed different work practices. Thinking about how you are already using training at work provides a base for continuing to use the best work practices. Your good work practices also help you identify where some procedures could be improved to further reduce the potential for exposure to the range of hazards at a waste site.

In this section, the facilitator will review reports from participants over the years of how training has reduced risk of exposure to health and safety hazards. Then you are asked to think about how you have used training in the past year and to identify activities where you could reduce risk of exposures further.

During this section you will:

- Review experience
- Gather information for a hazard assessment
- Select exposure reduction approaches
- Identify needed monitoring equipment

## **Activity 1 - Thinking about the Past Year in Waste Site Work**

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**Purpose:** Think about the past year and identify where risk of exposure can be reduced

**Directions:** Work in small groups to complete the Looking Back and Forward exercise

## **Getting Ready - Hazard Assessment and Control**

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This refresher includes a range of activities related to a waste site work. The facilitator will provide specifics of the work area.

During this section you will:

- Identify key site characteristics
- Assess hazards
- Identify work zones
- Select PPE and monitoring equipment

## **Activity 2 - Site Characteristics**

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**Purpose:** To better understand potential hazards in the work area.

**Directions:** Using the materials provided (site map, information about the hazardous waste site, general nature of the work), work in small groups to answer the following:

### **Performance Skills Checklist - Activity 2: Site Characteristics**

Can you describe the following?

- a. Topography..... Yes       No
- b. Hazardous materials present on the site and potential hazards ... Yes       No
- c. Potential hazards ..... Yes       No

## **Activity 3 - Hazard Assessment**

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In addition to the hazardous wastes, chemicals may be used on the site for remediation or support activities. Remediation and support activity chemicals are covered in the 2012 Hazard Communication Standard, 29 CFR 1910.1200. The health and safety risks from exposure to the wastes are not covered by HazCom. Content of wastes may be described in Waste Profile Sheets or if the contents are known then the hazards of individual chemicals can be identified from available resources.

**Purpose:** Use resources to assess basic hazards of materials.

**Directions:** Your facilitator will provide each participant the name of one chemical to be remediated or used in support activities. Working individually, use print and electronic resources (if available) to complete the appropriate Hazardous Materials Fact Sheet on the next pages for your assignment.

Before beginning the activity, ask the facilitator to review any terms you do not understand.

If some information is not findable in the resources you have, enter 'could not find'.

At the end of the activity, the answers will be reviewed in a report back session. For some properties, no information may be available; please contribute to the discussion, especially if you could not find a property for the chemical you were assigned.

The facilitator will provide a completed worksheet for each chemical for use in the remainder of this program.



Hazardous Materials Fact Sheet – Waste Chemical

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Chemical Name \_\_\_\_\_

Physical Form \_\_\_\_\_

PEL/STEL/IDLH \_\_\_\_\_

Flash point/LEL/UEL \_\_\_\_\_

pH (if applicable) \_\_\_\_\_

Solubility in water \_\_\_\_\_

Specific Gravity \_\_\_\_\_

Relative Gas Density/Vapor Density \_\_\_\_\_

Vapor Pressure \_\_\_\_\_

Major Routes of Exposure \_\_\_\_\_

Target Organs \_\_\_\_\_

Acute Effects \_\_\_\_\_

Chronic Effects \_\_\_\_\_

Incompatible Materials \_\_\_\_\_

Hazard Statements \_\_\_\_\_

Precautionary Statements \_\_\_\_\_

Signal Word \_\_\_\_\_

Hazardous Materials Fact Sheet – Remediation/support Chemical

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Chemical Name \_\_\_\_\_

Physical Form \_\_\_\_\_

PEL/STEL/IDLH \_\_\_\_\_

Flash point/LEL/UEL \_\_\_\_\_

pH (if applicable) \_\_\_\_\_

Solubility in water \_\_\_\_\_

Specific Gravity \_\_\_\_\_

Relative Gas Density/Vapor Density \_\_\_\_\_

Vapor Pressure \_\_\_\_\_

Major Routes of Exposure \_\_\_\_\_

Target Organs \_\_\_\_\_

Acute Effects \_\_\_\_\_

Chronic Effects \_\_\_\_\_

Incompatible Materials \_\_\_\_\_

Hazard Statements \_\_\_\_\_

Precautionary Statements \_\_\_\_\_

Signal Word \_\_\_\_\_

## **Activity 4 - Setting Work Zones and Communication**

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The instructor will provide a description of the work that will be conducted at this site by your group.

**Purpose:** To set up work zones at a hazardous waste site.

**Directions:** Using the site map and other information provided, set up the work zones. Then, answer the following questions. This may be conducted by the larger group, as not all small groups will be assigned activities that include more than one zone.

### **Performance Skills Checklist – Activity 4: Setting Work Zones and Communication**

1. Did you determine the following zones?
  - a. Hot .....  Yes     No
  - b. Warm .....  Yes     No
  - c. Cold .....  Yes     No
2. Did you establish a staging area? .....  Yes     No
3. Did you notify everyone of the site alerting signals?.....  Yes     No
4. List any gaps in the information provided:

## **Activity 5 - Selecting PPE and Air Monitoring Equipment**

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Personal protective equipment (PPE) and exposure assessment using air monitoring equipment is matched to the potential hazards you have identified. In this exercise, you will use resources to identify what is needed for the work scenario. At most hazardous waste remediation sites, someone with additional training selects PPE and conducts the monitoring. However, it is important for everyone to be skilled in recognizing differences in PPE and air monitors.

**NOTE:** PPE includes Chemical Protective Clothing (CPC), Respiratory Protective Equipment (RPE) and other protective gear (examples: hearing protection fall protection). All four levels of protection (A, B, C, D) include CPC; levels A, B, and C include RPE.

**Purpose:** To practice selecting PPE for a waste site exposure hazard.

**Directions:** For an assigned activity, use the information you have developed about the hazards at the site and any other resources provided to select appropriate PPE and air monitoring equipment.

**Performance Skills Checklist – Activity 5: Selecting PPE and Air Monitoring Equipment**

My/our work assignment \_\_\_\_\_

Hazard(s) \_\_\_\_\_

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 did you select?

a. Suit (type/material) \_\_\_\_\_

b. Respirator/cartridge \_\_\_\_\_

c. Glove material

▪ Inner \_\_\_\_\_

▪ Middle \_\_\_\_\_ (if applicable)

▪ Outer \_\_\_\_\_

d. Boots \_\_\_\_\_

3. What type of monitoring device did you select?

a. pH .....  Yes  No

b. 4/5-Gas .....  Yes  No

c. Detector tube .....  Yes  No

d. Other .....  Yes  No

Specify: \_\_\_\_\_

e. None, because: \_\_\_\_\_

**Summary - Getting Ready – Hazard Assessment and Control**

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Discuss the importance of the following:

- Site map
- Hazard Assessment
- Work Assignment
- Work Zones
- Personal Protective Equipment and Air Monitoring

## **Planning the Work Activity**

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Every site is different, and a Comprehensive Work Plan includes site-specific details on the remediation procedures. New technologies and specialized work practices may require additional training, and site-specific training.

An important part of site work is routine briefings to assure that everyone understands the work to be conducted and the written procedures to be efficient and safe. A good, timely understanding of the work to be done and the methods to accomplish the work will reduce the potential for exposure to unsafe conditions.

During this section you will:

- Review the work plan relevant to the assigned tasks to be accomplished
- Participate in a Work Briefing
- Re-evaluate PPE and air monitoring equipment selection

NOTE: In this training we use the term Standard Operating Guide (SOG), a written description of work procedures that are general and not tailored to any specific work location. At your worksite, you have Standard Operating Procedures (SOPs) that are site-specific and refer to the actual tools, machinery and equipment at the site.

## **Activity 6 - Work Briefing**

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Detailed description of how to conduct each task helps to assure a safe work environment. To be effective, these descriptions must be known by those doing the work and revised or updated as the workers identify the need or the work changes. The overall Work Plan in the Site Safety and Health Program will include many SOGs—one for each work activity (examples: drum sampling, decontamination, excavation, air monitoring).

Briefings are an important way of sharing this information—to learn about the safe work practices and to ask questions.

**Purpose:** Read a Standard Operating Guide (SOG) and participate in a briefing.

**Directions:** After reading the SOG and participating in the briefing, complete the checklist below:



**Performance Skills Checklist – Activity 6: Work Briefing**

- 1. Were these tasks in the overall work plan?
  - a. Site entry.....  Yes       No
  - b. Material handling .....  Yes       No
  - c. Decon .....  Yes       No
  
- 2. Were site characterization methods and results reviewed? .....  Yes       No
  
- 3. Were the following resources evaluated?
  - a. Personnel.....  Yes       No
  - b. Equipment/supplies.....  Yes       No
  - c. Information.....  Yes       No
  
- 4. Were these jobs assigned during this work?
  - a. Project Manager .....  Yes       No
  - b. Safety and Health Officer .....  Yes       No
  - c. Decontamination.....  Yes       No
  - d. Work Team I .....  Yes       No
  - e. Back-up Work Team II .....  Yes       No
  
- 5. Were the following used to minimize hazards?
  - a. Training.....  Yes       No
  - b. Barriers .....  Yes       No
  - c. PPE.....  Yes       No
  - d. Work practices .....  Yes       No

## Activity 7 - Double Check PPE and Air Monitoring Selection

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As new information becomes available or conditions change during site work, modifications may be needed in procedures.

**Purpose:** Double check that selections made after the hazard assessment are correct, now that the task and SOG are detailed.

**Directions:** Work in your group and look back at the PPE and Air Monitoring equipment that you selected. Answer the following:

### Performance Skills Checklist – Activity 7: Double Check PPE and Air Monitoring Selection

- Is the PPE correct for the task your group will do?
  - If no, show the new selection below:

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)

a. Suit (type/material) \_\_\_\_\_

b. Respirator/cartridge \_\_\_\_\_

c. Glove material

- Inner \_\_\_\_\_
- Middle \_\_\_\_\_ (if applicable)
- Outer \_\_\_\_\_

d. Boots \_\_\_\_\_

- Is the Air Monitoring equipment correct for the task your group will do?
  - If no, show the new selection below:
    - a. pH .....  Yes  No
    - b. 4/5-Gas .....  Yes  No
    - c. Detector tube .....  Yes  No
    - d. Other .....  Yes  No
    - Specify: \_\_\_\_\_
    - e. None, because: \_\_\_\_\_

**Summary - Planning the Work Activity**

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Discuss the importance of the following:

- Work plan
- Work Briefing
- SOGs
- Double Check

## **Conduct the Activity – Simulation**

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You are now ready to conduct the site-related work activity. As some aspects may have changed since the 'practice briefing' conducted earlier, an updated briefing may occur before you conduct the SOG activity.

During this section you will:

- Participate in an entry briefing
- Don and doff appropriate personal protective equipment
- Demonstrate the ability to accomplish the selected task

## **Activity 8 - Entry Briefing**

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**Purpose:** To participate in an entry briefing.

**Directions:** The entry briefing will be conducted, and you will have an opportunity to ask questions regarding your task, the PPE to be used and any tools you need. .

### **Performance Skills Checklist – Activity 8: Entry Briefing**

1. Were you part of briefing that covered the following?
  - a. Site details .....  Yes       No
  - b. Hazards .....  Yes       No
  - c. Tasks .....  Yes       No
  - d. Communications .....  Yes       No
  - e. Emergency signals.....  Yes       No
  
2. Did you complete the following before initiating tasks?
  - a. Review the SOG .....  Yes       No
  - b. Buddy system .....  Yes       No
  - c. Verify decontamination line is ready .....  Yes       No
  
3. Was there an opportunity to ask questions about all procedures? .....  Yes       No

**Activity 9 - Donning/Doffing PPE**

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**Purpose:** To practice donning and doffing PPE for hazardous waste site work.

**Directions:** You will don/doff the PPE needed for your task.

Task: \_\_\_\_\_

Suit: Size/material \_\_\_\_\_ / \_\_\_\_\_

Respirator/cartridge: manufacturer and type \_\_\_\_\_

Glove size/material: Inner \_\_\_\_\_ / \_\_\_\_\_ Outer \_\_\_\_\_ / \_\_\_\_\_

Boot Size/Type \_\_\_\_\_ / \_\_\_\_\_

Level of protection \_\_\_\_\_

**Performance Skills Checklist – Activity 9: Donning/Doffing PPE**

- |   |                              |                             |                              |
|---|------------------------------|-----------------------------|------------------------------|
| 1. Did you inspect the PPE before donning it?   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 2. Did your buddy make pull tabs when taping boots, pants, gloves, and sleeves?             | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 3. Did you perform a positive- and/or negative-pressure check of your respirator facepiece? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 4. Did your buddy review the communications system you would use?                           | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 5. Did you don the PPE ensemble completely using a SOG?                                     | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 6. Did you receive a pre-entry briefing?  | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 7. Did you perform an assigned task?  | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 8. Did you touch the outside of your suit while it was being removed?                       | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 9. Did you properly remove your inner gloves?   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |

## **Activity 10 – The Work Activity**

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**Purpose:** To practice a skill relevant to waste site work.

**Directions:** You will conduct the task, as described in the SOG. When you have completed the task, complete the checklist below. (If your task is decon, skip to the next Activity)

### **Performance Skills Checklist – Activity 10: A Work Activity**

1. Did you select the proper PPE? .....  Yes     No     N/A
  
2. Was hazard evaluation information provided?.....  Yes     No
  
3. Indicate the methods used to limit the exposure.
  - a. Work practice .....  Yes     No
  - b. Distance .....  Yes     No
  - c. PPE.....  Yes     No
  - d. Buddy system .....  Yes     No
  
4. Did you work in a manner to minimize contamination in the work area?  Yes  No
  
5. Did you use an air monitoring device to detect or measure exposure?  Yes  No

## **Activity 11 - Decontamination**

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**Purpose:** To conduct decontamination.

**Directions:** If decon was your task, complete the checklist below.

### **Performance Skills Checklist – Activity 11: Decontamination**

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



## **Summary - Simulation**

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Discuss the importance of each of the following:

- Entry Briefing
- Proper donning and doffing procedures when using PPE
- SOG for the work activity
- Decon

## **Critique and Follow-up**

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Review of work activities is valuable to identify problems and provide improvements to the work plan. It is this critique phase that is often overlooked. As a result, opportunities to reduce or eliminate exposures may be missed. In this section, we will critique the simulation and identify follow-up actions.

During this section you will:

- Participate in a debriefing
- Identify possible follow-up actions
- Notify appropriate personnel of needed actions

## **Activity 12 - Debriefing and Critique**

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**Purpose:** To discuss what worked well during the activity and what did not. Use the problems that are identified to generate suggested solutions.

**Instructions:** Organize in a group-of-the-whole or small groups to identify strengths and problems in conducting the work activity. For each problem, be ready to show how this could be fixed. One summary should be completed based on the discussion.

Performance Skills Summary – Activity 12: Debriefing and Critique

What worked?

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What were the problems?

Suggested Solutions

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Has the Project Manager been notified of needed changes?       Yes     No

Has the Health and Safety Officer been notified of resupply needs?     Yes     No

## **Summary - Critique and Follow up**

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Discuss the importance of the following:

- Critique
- Identifying possible solutions when problems are identified
- Notifying appropriate personnel of needs

## **Closing and Program Evaluation**

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

- Review basic skills and knowledge about hazardous waste site work
- Provide updates on standards/regulations, new technology and equipment
- Engage in learning and problem-solving activities to improve safety and health conditions on a site
- Reinforce safe work practices
- Reinforce the role of personal protective equipment on a site
- Reinforce the importance of a site-specific safety and health plan in controlling hazards

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.