



Heat and Cold Safety

Facilitator Guide

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Midwest Consortium for Hazardous Waste Worker Training

Acknowledgments

The Midwest Consortium for Hazardous Waste Worker Training developed this program under cooperative agreement number U45 ES 06184 from the National Institute of Environmental Health Sciences (NIEHS). We encourage you to comment on these materials. Please give any feedback to your Program Director.

Warning

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Disclaimer

The Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.120 to help ensure worker health and safety at hazardous waste sites and during emergency response requires specific training and other health and safety measures depending upon the duties to be performed. This awareness program does not replace training required by this standard.

This content was updated May 30, 2024, and all web links are active as of that date. If you find an error, please inform the facilitator so that it can be updated.

Overview

This is an awareness-level course designed to train workers to reduce their risk of heat and cold stress and treat heat- and cold-related illness if needed.

It is expected that 2 hours are needed for the program. Breaks are not part of the training hours. The Midwest Consortium for Hazardous Waste Worker Training is devoted to facilitator freedom while maintaining consistency of training.

Facilitator Preparation

This Facilitator Guide provides guidance for presenting the course. It includes information such as time requirements, suggested facilitator preparation, minimum content requirements, issues which may arise, and reference materials.

In addition to this guide, a PowerPoint is provided. The PowerPoint can be printed as a Participant Guide (see details below). Every facilitator should be familiar with the material in the PowerPoint and this Facilitator Guide. Lesson plan forms shown below may be helpful when drafting your presentation outline.

The facilitator should also:

- Gather necessary paperwork prior to the session
- Ensure operation of audiovisual equipment prior to the session
- Ensure you can show videos, as the PowerPoint contains several
- Test web links prior to the session
- Print and make copies of the PowerPoint (3-slide Handout option) so participants can take notes and have all content to refer to in the future. This will serve as their Participant Guide.

Agenda

The following is a sample agenda:

Introduction	15 minutes
Heat and Cold Safety	90 minutes
Closing and Evaluation	15 minutes

Lesson Plan Form 1

<p>Teaching Methods for This Lesson Plan (Check each method you will use)</p>	<p>Audiovisual Requirements (Check each that is needed)</p>
<p> <input type="checkbox"/> Presentation <input type="checkbox"/> Discussion <input type="checkbox"/> Question and answer <input type="checkbox"/> Hands-on simulation <input type="checkbox"/> Team teaching <input type="checkbox"/> Small-group exercises <input type="checkbox"/> Case study <input type="checkbox"/> Other (describe): </p>	<p> <input type="checkbox"/> Training guidebook <input type="checkbox"/> Supplemental material <input type="checkbox"/> PowerPoint <input type="checkbox"/> Websites loaded on devices: <input type="checkbox"/> Whiteboard or equivalent <input type="checkbox"/> Hands-on simulation <input type="checkbox"/> Other (describe): </p>
<p>Reference Materials (List all materials needed-paper or electronic)</p>	<p>Special Space or Facility Requirements</p>
	<p>(List any room size or special facility regulations here, such as set-up areas, equipment storage concerns, etc.)</p>
<p>Suggested Discussion Questions (Think <u>in advance</u> what you might be asked, and prepare responses)</p>	<p>Suggested Facilitator Preparation (Consult with others as needed to improve preparation skills)</p>

Lesson Plan Form 2

Subject Area or Element	Detail	Reference Number or Citation
Major subject heading or Roman numeral item from outline format.	Detailed breakdown of subject area or element. This detail will necessarily occupy more space than shown here.	e.g., page number in training handbook, section number of regulation, or audiovisual material.

Resources

The resources listed below may be useful in preparation and during the program.

OSHA – Heat - <https://www.osha.gov/heat-exposure>

- Heat Illness Prevention Campaign - <https://www.osha.gov/heat>
- Technical Manual - <https://www.osha.gov/otm/section-3-health-hazards/chapter-4>
- Heat Stress Risk Factors - <https://www.cdc.gov/niosh/mining/UserFiles/works/pdfs/2017-125.pdf>
- Winter Weather - <https://www.osha.gov/winter-weather/cold-stress>

NIOSH – Heat Stress <https://www.cdc.gov/niosh/topics/heatstress/default.html>

- Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments: <https://www.cdc.gov/niosh/docs/2016-106/>
- Cold Stress - <https://www.cdc.gov/niosh/topics/coldstress/default.html>
- Cold Stress Fast Facts - <https://www.cdc.gov/niosh/docs/2010-115/pdfs/2010-115.pdf>

Presentation of Material

A PowerPoint presentation is available to facilitate communication of this material.

Exercises

Class activities and exercises enhance the learning process; therefore, it is strongly recommended that you make activities and discussions comfortable so that everyone can participate. Assume that every class will have participants with a wide range of communication skills. Some trainees will have no problems participating in group discussion, while others may have a hard time talking in front of the group.

Suggestions for facilitating group activities and discussions include:

- Allow trainees to freely express their values, attitudes, and opinions.
- Do not judge trainee's responses.

- Facilitate discussion by paraphrasing and clarifying. It is seldom appropriate for the facilitator to give opinions.
- Avoid putting people on the spot. Instead of asking individuals for answers, have a volunteer spokesperson present findings to the entire group.
- Keep the groups focused on the task at hand. Because small-group exercises can draw heavily on the trainees' personal experience, sometimes conversation can drift.
- Be alert to the potential for one person to dominate work in small groups. If you see this happening, facilitate participation by other members of the group.
- Keep the trainees alert and interested by encouraging participation. If the groups are not participating or giving only cursory answers, ask them probing questions linked to previous work or life experiences.

Evaluation

Evaluation provides input from participants regarding value to them, achievement of learning objectives and insights into how to improve the program. NIEHS supports 'model programs' that employ interactive training methods to build skills; see https://tools.niehs.nih.gov/wetp/public/hasl_get_blob.cfm?ID=11266&file_name=WTP_Minimum_Criteria_062818_Final_508.pdf. Collection and use of evaluation data are key to program improvement. Adherence to these criteria is a term-and-condition of NIEHS funding.

Evaluation forms are shown at <https://mwc.umn.edu>.

Successful Completion

Successful Completion for this program requires the following:

- Attendance for the entire program
- Participation in Exercises

Introduction

Time Requirement: 15 minutes

Number of Facilitators: 1 or more, consistent with ratio shown in Minimum Criteria

Materials

- Registration forms
- Whiteboard or equivalent; markers

Objectives for the Full Program

When completed, participants will better be able to:

- Recognize risk factors for heat and cold stress
- Describe types of heat and cold illness, symptoms, and first aid
- Identify worker protection standards
- Identify methods to reduce risk of heat and cold stress

During the brief introduction, the following will be accomplished:

- Introductions
- Registration
- Sign-in

Teaching Methods

It is important as a facilitator to gauge the level of knowledge of the participants. A discussion of experience of each participant may be useful.

Suggested Facilitator Preparation

- Prepare lesson plan

Minimum Content Requirements

- Introduction of facilitator(s), program, participants
- Complete registration forms (if not done in advance)
- Everyone signs in

Presentation of the Session

The session can be presented as follows.

Introduce facilitator(s) and provide any needed orientation. Review MWC, NIEHS 'model programs' and uses of evaluation. Note that attendance is required for the duration of the program.

Present the agenda that has been prepared, noting that training time does not include lunch or breaks. Post where all can see, if desired.

Ask participants to introduce themselves, describing experience and what each wants to gain from the session. Note any goals identified by participants that are not in the listing above - address any that may fit with the session materials and describe why remaining goals are outside the scope of this training.

Collect any forms and provide to program staff for retention.

Heat and Cold Safety

Time Requirement: 90 minutes

Number of Instructors: 1 or more, consistent with ratio shown in Minimum Criteria

Materials

- Heat and Cold Safety PowerPoint
- Participant Guide (3-slide Handout option of the PowerPoint)
- Technology – computer(s), projector, screen, cables, internet

Objectives

When completed, participants will be better able to:

- Recognize risk factors for heat and cold stress
- Describe types of heat and cold illness, symptoms, and first aid
- Identify worker protection standards
- Identify methods to reduce risk of heat and cold stress

Suggested Facilitator Preparation

- Review the PowerPoint
- Review this guidance
- Review government standards and guidance

Minimum Content Requirements

- Risk factors for heat and cold stress
- Types of heat/cold illness, symptoms, and first aid
- Worker protection standards and guidelines
- Risk reduction for heat and cold stress

Questions You May Be Asked

1. Am I more at risk when working in the heat/cold because of my heart condition?

Health conditions such as diabetes or heart disease are a risk factor for heat stress. Encourage participants to ask their doctors how working in the heat/cold will impact them personally, including their medications.

2. What are the first signs of heat stroke or heat exhaustion?

Heat cramps can be the first sign of impending heat stroke or heat exhaustion. Emphasize why it is important to treat the first signs of illness, before they increase in severity.

Presentation of the Session

This session can be presented as follows:

Use the Heat and Cold Safety PowerPoint and notes below.

Heat (Modules 1-5)

A link to the OSHA video ‘Remembering Tim – A life lost to heat illness at work’ is provided in the PowerPoint. It is 8 minutes long, but you could choose to show only a portion of it, the first 4 minutes for example. The wet bulb globe temperature video is only about a minute long.

For NIOSH REL and RAL values and additional information on PPE to protect against heat, see 6.3 Personal Protective Clothing and Auxiliary Body Cooling in the NIOSH Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments. <https://www.cdc.gov/niosh/docs/2016-106/>

Exercise - Heat (Module 6)

Time requirement: 20 minutes

Materials: The content for this Exercise can be found in the PowerPoint.

Objective: Discuss scenarios related to heat stress.

Break into small groups and discuss the 4 scenarios, with one participant in each group taking notes. If participants have scenarios from their own workplace they would like to discuss, these can be added or substituted for existing scenarios.

Facilitate a report-back and discussion (see notes below) with the whole class.

Scenario 1: Risk Factors – Physical exertion, clothing and PPE, advanced age (which might also mean health problems and poorer physical condition), radiant heat sources, humidity, possibly limited air movement since the room is small.

Engineering Controls – increased ventilation such as fans, air conditioning, reduce steam leaks, exhaust ventilation, consider PPE that protects against heat exposure

Work Practices – rotate other workers into job, reduce physical demands, train workers regarding heat stress, increase physical fitness, provide adequate water, plan frequent breaks in cooler area.

Scenario 2: The worker may have heat exhaustion. Take the worker to a cooler area. Remove outer layers of clothing. Use fans if available. Use ice or cold towels on worker's body. If possible, immerse worker in cold water.

Scenario 3: Implement an acclimatization plan, which eases new employees into work.

Scenario 4:

Engineering Controls – Increase ventilation in work area, air condition work area, reduce radiant heat, use mechanical equipment to reduce manual work

Work Practices – Have frequent rest breaks, wear light-weight fast-drying clothing, reduce physical demands, increase number of workers, provide adequate water, increase physical fitness

Cold (Modules 1-5)

Additional information regarding Winter Hazards can be found:

Winter Driving: <https://www.osha.gov/sites/default/files/publications/SafeDriving.pdf>

Snow removal from roofs:

<https://www.osha.gov/sites/default/files/publications/OSHA3966.pdf>

<https://www.osha.gov/sites/default/files/publications/OSHA-3513roof-snow-hazard.pdf>

Exercise - Cold (Module 6)

Time requirement: 20 minutes

Materials: The content for this module can be found in the PowerPoint.

Objective: Discuss scenarios related to cold stress

Break into small groups and discuss the 5 scenarios, with one participant in each group taking notes. If participants have scenarios from their own workplace they would like to discuss, these can be added or substituted for existing scenarios.

Facilitate a report-back and discussion (see notes below) with the whole class.

Scenario 1:

Risk Factors - Cold/wet, exhaustion, increased likelihood of poorer health/conditioning due to age.

Engineering Controls – Perhaps provide shielding from wind or a shelter?

Work Practices - Focus outdoor time during warmest part of day, add a buddy or extra workers to rotate outdoor tasks, have breaks in warm areas and chance to change clothes, drink warm liquids, maintain communication/monitoring with outdoor employees. Wear correct clothing, gloves, boots, hat, mask, goggles.

Scenario 2:

Work Practices – Clear work surfaces of snow/ice, use deicer, take short steps and walk slowly. Avoid working at heights during bad weather if possible.

Clothing and equipment – Wear insulated and water-resistant boots with good rubber treads. Consider a personal fall arrest system. Use correct equipment for the job (ladders, aerial lift, etc).

Scenario 3: Yes, thermal protection is needed even when wearing Level B. Wear correct clothing, gloves, boots, hat, mask, goggles. Focus outdoor time during warmest part of day, add a buddy or extra workers to rotate, if possible, have breaks in warm areas, drink warm liquids, maintain communication/monitoring with other employees.

Scenario 4: Your buddy might have hypothermia. You should get indoors immediately and seek professional medical attention. Provide warm, sugary fluid but no caffeine.

Scenario 5: You might have frostbite. You should get indoors immediately and seek professional medical attention. Avoid rubbing the area. Instead immerse in 100 °F water (not hotter) for 20-45 minutes. Wrap in soft cloth. Avoid salves or creams.

Closing and Evaluation

Time Requirement: 15 minutes
Number of Facilitators: 1 or more, consistent with ratio shown in Minimum Criteria

Materials

- Whiteboard or equivalent; markers
- Evaluation forms

Objectives

- Review program objectives
- Answer questions
- Collect feedback (evaluation forms)

Suggested Facilitator Preparation

Ensure you have evaluation forms.

Minimum Content Requirements

The following are minimum content requirements for the section:

- Evaluation
- Answer last questions, including anything remaining in the parking lot
- Provide certificates for those who met the definition of successful completion; provide remediation according to Training Center and MWC policy for anyone who did not attend the entire program.

Question You May Be Asked

“How do I get more training?”

Provide your upcoming training schedule or reference other MWC members who provide the needed training. Refer to <http://mwc.umn.edu>.

Presentation of the Session

Thank participants for attending the program.

Review the program objectives.

This is an opportunity for final questions and to ensure that the list of questions has been addressed during the program.

Evaluation is important to continued program improvement. This should not be rushed. Provide time to complete the program evaluation forms and collect them.

Forward suggestions to improve this exercise to your Program Director. Forward any impact stories or ‘takeaways’ to your Program Director.