



**M3108**  
**THE OSHA**  
**LABORATORY STANDARD**  
**SAFETY TRAINING**

*Leader's Guide*

## THE OSHA LABORATORY STANDARD SAFETY TRAINING

This easy-to-use Leader's Guide is provided to assist in conducting a successful presentation. Featured are:

**INTRODUCTION:** A brief description of the program and the subject that it addresses.

**PROGRAM OUTLINE:** Summarizes the program content. If the program outline is discussed before the video is presented, the entire program will be more meaningful and successful.

**PREPARING FOR AND CONDUCTING THE PRESENTATION:** These sections will help you set up the training environment, help you relate the program to site-specific incidents, and provide program objectives for focusing your presentation.

**REVIEW QUESTIONS AND ANSWERS:** Questions may be copied and given to participants to document how well they understood the information that was presented. Answers to the review questions are provided separately.

**ATTENDANCE RECORD:** Document the date of your presentation and identify the program participants by creating an attendance record.

### INTRODUCTION

OSHA's Hazard Communication Standard helps ensure that we get the information and training we need to work safely with hazardous chemicals. The Laboratory Standard goes one step further by requiring employers to maintain a Chemical Hygiene Plan. This plan is a written program that identifies the equipment and procedures used to protect employees from hazardous chemicals in the laboratory.

This video provides the viewer with an overall understanding of the OSHA Lab Standard and the Chemical Hygiene Plan. Topics include Material Safety Data Sheets, container labels, types of hazardous chemicals, PPE, lab hoods, lab glassware, types of exposures and response to leaks and spills.

### *PROGRAM OUTLINE*

#### WHAT IS A LABORATORY?

- According to OSHA, work in a laboratory must be carried out on a "laboratory scale," meaning that containers used for reactions, transfers and other handling can be used easily and safely by one person.
- None of the procedures used in a laboratory can be part of or a simulation of a "production process."
- A laboratory must have protective equipment and practices available and in use to minimize exposures to hazardous chemicals.
- A laboratory will have a Chemical Hygiene Plan that outlines the standard operating procedures that should be followed when working with chemicals.

#### MATERIAL SAFETY DATA SHEETS

- The MSDS is the primary source for information about a chemical, listing various names of the chemical, the manufacturer and any hazardous ingredients that the chemical contains.
- The MSDS will also describe the types of hazards the chemical may present, first aid procedures for exposures, spill clean-up techniques, handling and storage procedures and how to protect against exposures.
- Remember to read the MSDS before you work with an unfamiliar chemical. Make sure that you are looking at the most recent version.

## **CHEMICAL LABELS**

- Remember to read the container label before working with a chemical. The label will identify the chemical, its primary hazards and the required safety precautions.
- The formats of labels vary; there are those that are written, some use shapes or letters and others have symbols or pictures to represent hazards.
- When you transfer a chemical to another container, it is your responsibility to label the new container according to your facility's labeling system.

## **HAZARDOUS CHEMICALS**

- The Laboratory Standard defines a hazardous chemical as a substance that has the potential to cause "negative health effects."
- **Sensitizers** are chemicals that can cause allergic skin reactions such as rashes after repeated exposures.
- **Irritants** may cause inflammation of the skin, eyes and respiratory system after a single exposure. These effects are usually temporary.
- **Corrosives** can cause irreversible bodily damage in the form of severe burns.
- **Toxic chemicals** have the potential to disrupt bodily functions such as breathing and blood circulation. Some toxins target specific organs such as the lungs, kidneys and the liver.
- A poison is an extremely toxic substance that can cause death in a short period of time, even in very small doses.
- **Carcinogens** are substances that can cause cancer after repeated exposures.
- Facilities take three basic approaches to protect employees from exposures to hazardous chemicals: Administrative Controls, Engineering Controls and Personal Protective Equipment.
- Administrative Controls are steps that the company takes to protect workers. These can include general policies, specific procedures and even work schedules that limit or eliminate your chances of exposure.

## **PERSONAL PROTECTIVE EQUIPMENT**

- PPE is your last line of defense against exposure to hazardous chemicals, but it must be the first thing you take care of when you enter the lab.
- Safety glasses offer minimum protection in the laboratory. Work involving corrosives or other splash hazards may require splash-proof goggles or the addition of a face shield.
- Surgical and other rubber gloves can protect your hands from most contact hazards. Insulated gloves are needed when working with very hot or cold materials.
- Respiratory protection in the lab includes a simple filter mask, an air-purifying cartridge respirator and the self-contained breathing apparatus.
- No matter what type of respirator you use, it must fit properly to protect you against hazardous fumes.

## **LABORATORY HOODS**

- Laboratory hoods, the most common engineering controls in the lab, are ventilated enclosures that help contain fumes and vapors.
- For a lab hood to work, the air flow must not be blocked with equipment or materials.
- The hood can act as a physical barrier against spills and splashes as long as you lower the sash when working.
- Storing chemicals in a hood can be extremely dangerous; always return supplies and glassware to their appropriate storage places.

## **HANDLING GLASSWARE**

- Improper handling of glassware is the leading cause of accidents in the lab.
- Before using glassware, inspect it for cracks, chips and other flaws. Even hairline cracks can cause big problems, especially if you add heat.
- When handling heated glassware, remember to use insulated gloves.
- To prevent problems with glassware, return equipment to its proper storage place and keep it away from the edge of shelves and counter tops.

## **ROUTES OF ENTRY**

- A hazardous chemical that comes in contact with your eyes or skin can cause a localized reaction or can be absorbed into the bloodstream.
- In case of one of these injuries, a safety shower and/or eyewash is the first line of defense. You should be able to find the shower and eyewash in your area with your eyes closed.
- If a chemical splashes into your eyes, get to an eyewash as quickly as possible and hold your eyes open in the stream of water for at least 15 minutes.
- If a chemical splashes onto your body, call out for help and head to the nearest safety shower. Remove your PPE and clothing and remain in the shower for at least 15 minutes.
- If someone has inhaled gases, fumes or vapors, remove the victim from the immediate area and get them into fresh air.
- Injection is another route of entry; broken glassware and sharp instruments can be sources of this type of exposure.
- Seek professional medical attention as quickly as possible, even if you have received a minor exposure. Report all exposures to hazardous chemicals to your supervisor.

## **SPILLS AND LEAKS**

- Quickly evaluate the situation in the event of a leak or a spill. First attend to anyone who is injured and then evacuate the area if others are in danger.
- You should then notify the appropriate personnel, which may be your supervisor, the Chemical Hygiene Officer or an outside HazMat Response Team.
- If you can handle the spill or leak yourself, work to contain it. Check the MSDS for proper clean-up procedures.
- Many chemicals can be absorbed with a non-reactive material such as dry sand, while inorganic acids and bases need to be absorbed with a neutralizing substance such as Soda Ash.

## **MEDICAL TREATMENT**

- If you have been exposed to a hazardous chemical, you may see a doctor to determine if you need a more detailed medical examination.
- Medical Surveillance may be required if you work around certain hazardous substances. Medical Surveillance includes periodic examinations or medical tests.
- Any examinations or consultations will be performed by a licensed physician and will be free of charge to you.

## **OTHER HAZARDS**

- Some chemicals, such as flammables and combustibles, can present special physical hazards. These are covered by the OSHA Hazard Communication Standard.
- Some substances may contain biological hazards, such as viruses, bacteria and other bloodborne biohazards. Information on these hazards can be found in your facility's Exposure Control Plan.

- Some other hazards that may be encountered in the lab are lasers, ultraviolet light and X-ray radiation.

### **PREPARE FOR THE SAFETY MEETING OR TRAINING SESSION**

Review each section of this Leader's Guide as well as the videotape. Here are a few suggestions for using the program:

Make everyone aware of the importance the company places on health and safety and how each person must be an active member of the safety team.

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline.

Copy the review questions included in this Leader's Guide and ask each participant to complete them.

Copy the attendance record as needed and have each participant sign the form. Maintain the attendance record and each participant's test paper as written documentation of the training performed.

#### **Here are some suggestions for preparing your videotape equipment and the room or area you use:**

Check the room or area for quietness, adequate ventilation and temperature, lighting and unobstructed access.

Check the seating arrangement and the audiovisual equipment to ensure that all participants will be able to see and hear the videotape program.

Place or secure extension cords to prevent them from becoming a tripping hazard.

### **CONDUCTING THE PRESENTATION**

Begin the meeting by welcoming the participants. Introduce yourself and give each person the opportunity to become acquainted if there are new people joining the training session.

Explain that the primary purpose of the program is to help viewers understand the details of the OSHA Laboratory Standard and how they can protect themselves from exposures to hazardous chemicals in the lab.

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline. Lead discussions about hazardous chemicals that are used at your facility and how participants can prevent exposures to them. Use the review questions to check how well the program participants understood the information.

After watching the videotape program, the viewer will be able to explain the following:

- Information found on Material Safety Data Sheets and container labels;
- Types of hazardous chemicals and ways to prevent exposures to them;
- Why it is important to handle glassware safely in the lab;
- Procedures for responding to spills and leaks.

**THE OSHA LABORATORY STANDARD SAFETY TRAINING**  
**REVIEW QUESTIONS**

Name \_\_\_\_\_ Date \_\_\_\_\_

*The following questions are provided to determine how well you understand the information presented during this program.*

1. What is the primary source of information about a chemical?
  - a. college chemistry textbook
  - b. the MSDS
  - c. the container label
  - d. OSHA records
  
2. A corrosive is \_\_\_\_\_ harmful to the body than irritants.
  - a. more
  - b. less
  - c. about the same
  
3. It is safe to store chemicals in a laboratory hood as long as the sash is closed.
  - a. true
  - b. false
  
4. What is the leading cause of accidents in the laboratory?
  - a. failure to read container label
  - b. misuse of respiratory protection
  - c. mishandling glassware
  - d. improper storage of chemicals
  
5. When a spill occurs, what should you do first?
  - a. notify appropriate authorities
  - b. work to contain the spill
  - c. attend to anyone who is injured
  - d. none of the above
  
6. How long should you remain in a safety shower after an exposure to a chemical?
  - a. 3 minutes
  - b. 7 minutes
  - c. 10 minutes
  - d. 15 minutes
  
7. What is the term for the way that chemicals enter the body?
  - a. Methods of Absorption
  - b. Routes of Entry
  - c. Paths of Infection
  - d. Course of Ingestion

*ANSWERS TO THE REVIEW QUESTIONS*

1. b

2. a

3. b

4. c

5. c

6. d

7. b