

## **HAZARD COMMUNICATION TRAINING FOR EMPLOYEES**

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.

### **INTRODUCTION**

This program explains how employees can work safely with chemicals by understanding the key elements of your organization's Hazard Communication Program. In our jobs, we may work with chemicals that are hazardous, but we don't have to place ourselves in danger. When armed with proper training and access to a chemical's hazard information, each of us has the ability to work with or handle these chemicals in a safe manner. By following the Hazard Communication Program, reading chemical labels and Material Safety Data Sheets and following the safe work practices listed, workers create a successful formula for chemical safety.

Topics include hazardous chemicals, routes of entry, chemical manufacturer labels, NFPA and HMIS labels, Material Safety Data Sheets and the Written Hazard Communication Program.

### **PROGRAM OUTLINE**

#### **HAZARDOUS CHEMICALS & ROUTES OF ENTRY**

- A hazardous chemical is any substance that poses a physical or health hazard to you or others in the workplace.
- Chemicals that present a physical hazard are those which have the ability to cause fires, explosions or other violent reactions.
- Chemicals that present health hazards are those which cause acute or chronic health effects in exposed employees. Examples of health effects include cancer, skin irritation or respiratory ailments.
- Acute health effects are those that occur immediately upon exposure, while chronic health effects occur over time, after repeated exposures.
- In order to avoid harmful exposures to hazardous chemicals, we must first understand how hazardous chemicals can enter our bodies. These methods are called routes of entry and there are three common routes: absorption, inhalation and ingestion.
- Absorption occurs when a chemical comes in contact with exposed skin, eyes or mucus membranes. Using a chemical without proper protective equipment or being exposed to a spill or splash can lead to the absorption of a hazardous chemical.
- Inhalation takes place when a chemical that is airborne as a gas, vapor, mist or dust is allowed to enter our lungs. Using a chemical without proper respiratory protection or in an area without adequate ventilation can lead to the inhalation of a hazardous chemical.

- Ingestion occurs when a chemical is swallowed. This could occur from directly eating or drinking a chemical or indirectly, such as eating contaminated food prepared by unwashed hands.

## **CHEMICAL LABELS**

- The chemical label, sometimes called the manufacturer's label, provides information such as the commercial name of the chemical, the name and address of the manufacturer and the possible physical and health hazard warnings.
- It may also include what personal protective equipment is needed. For example, chemical gloves, safety goggles or respiratory protection may be listed on the label as required PPE.
- The manufacturer's label may also list special storage or handling requirements. For example, some chemicals should not be used near an ignition source or require storage below a certain temperature.
- Another important piece of information found on most manufacturers' labels are first aid procedures to follow after an exposure.
- Be aware that there is no standard chemical label and each manufacturer may use different symbols to indicate hazards. Make sure you read, understand and follow the information presented on the manufacturer's label before using any chemical.

## **NFPA, HMIS & OTHER LABELS**

- Because manufacturer's labels can be hard to read quickly, other labeling systems have been created. Two of the most common types of supplemental labels are the National Fire Protection Association (or NFPA) label and the Hazardous Material Identification System (or HMIS) label.
- These labels use a system of colors and numbers to quickly convey the severity of any health, flammability and reactivity hazards presented by a chemical.

The NFPA label is diamond-shaped and contains four colored areas: blue, red, yellow and white. A number (zero through four) will be displayed in the blue, red and yellow areas, zero to indicate no hazard and four to indicate a severe hazard.

- The blue area is used to represent the health hazard of the chemical. A '1' in this area indicates a minor health risk, such as skin irritation. A '4' on the other hand indicates that death or extreme injury can occur from even a slight exposure.
- The red area is used to represent a chemical's flammability. A '1' in this area represents a material with a flashpoint of over 200°F and is not considered flammable, while a '4' in this area indicates a chemical with a flashpoint below 73°F and is extremely flammable.
- The yellow area is used to represent a chemical's reactivity; reactivity is a measure of a chemical's tendency to react violently to changes in temperature or pressure. A '1' displayed here represents a material that is stable at normal temperature and pressure. A '4' displayed here indicates a substance that has a tendency to explode or decompose violently at normal temperature and pressure.
- The white area, located at the bottom of the diamond, is reserved for special warnings and symbols for specific hazards related to the material.
- Some common warnings found in this section include "Use no water", "Corrosive" and "Oxidizer".

- Another common supplemental label, the Hazardous Material Identification Label (HMIS), contains color-coded horizontal bars and a zero through four hazard ranking system, with zero being a low hazard and four being a severe hazard.
- Although there are many different styles of HMIS labels still in use, the most current label contains the following sections.
- The blue bar on the top represents a chemical's health hazard. The use of an asterisk in the box next to the numerical ranking designates the material either as a carcinogen or as having chronic health effects.
- The red bar represents a chemical's flammability.
- The third bar, once yellow and representing reactivity, is now orange and signifies a chemical's physical hazard, such as if it is water reactive, explosive or an oxidizer.
- Unlike the NFPA label, the HMIS label provides information on required protective equipment. This important data can be found in the white area and is indicated by a letter coding system; each letter corresponds to a graphic that demonstrates what type of personal protective equipment is required.
- Many organizations have created their own chemical labeling system; if this is the case you will be instructed how to interpret the particular labels used in your facility.
- It's important to remember that all chemical storage containers must be labeled. Unlabeled containers are very dangerous because there is no easy way to understand the hazards of what it may contain.
- This includes smaller, secondary storage containers. If you are transferring chemicals from a larger container to a smaller one, remember that the smaller container must still be labeled.
- The only exception is when the small, portable container is for the immediate use of the employee who performs the transfer.
- All chemical labels must be maintained in good condition and remain legible. Chemical labels must be written in English; however, other languages may be added in addition to the required English.

## **MATERIAL SAFETY DATA SHEETS**

- Every chemical has a detailed Material Safety Data Sheet. Often called an MSDS, these Material Safety Data Sheets are readily available to all employees and contain more detailed information than that found on chemical labels.
- While there is no one standard format, most Material Safety Data Sheets are divided into sections. The number of these sections vary, usually ranging from eight to sixteen. At a minimum, the MSDS will contain the following information.
- Manufacturer's Name and Contact Information: This section will contain the manufacturer's name, address, telephone number and an emergency contact number.
- The Identity of the Chemical and Hazardous Ingredients: This section lists both the chemical and common name for the substance, which must match the name listed on the chemical label. If the substance is a mixture, the chemical and common name of all hazardous ingredients will be listed. Also listed will be any applicable exposure limits to the hazardous ingredients such as the Permissible Exposure Limit (PEL) and the Threshold Limit Value (TLV). Exposure limits help determine when protective equipment or other measures to reduce exposure will be required.

- Physical and Chemical Characteristics: This describes the physical and chemical characteristics of the substance. This includes traits that may help identify a spill or leak such as color and odor. Also included will be important traits that impact safe handling and storage such as boiling and melting points; vapor pressure and specific gravity.
- Fire and Explosion Hazard Data: The information contained in this section can be used to prevent fires or explosions. For example the flashpoint will be listed. The flashpoint is the minimum temperature at which a liquid gives off enough vapor to ignite. Generally, the lower the flashpoint, the more flammable the substance. This section also lists firefighting information such as the type of fire extinguisher to be used and any special firefighting procedures.
- Reactivity Data: Chemicals have the ability to react, sometimes violently, when exposed to certain substances or physical conditions. This section will describe the chemical's stability, and list which conditions and substances must be avoided to prevent a harmful reaction.
- Health Hazard Data: This section contains information on routes of entry, the signs and symptoms of exposure, any acute or chronic health affects, and whether the substance is a carcinogen.
- Emergency and First Aid Procedures: Knowing what to do if exposed to a hazardous chemical is critical information. Reading this section before working with a substance helps you be prepared in the event of accidental exposure. Ingestion, skin contact, inhalation and eye contact may each require unique and specific first aid treatment which will be listed in this section.
- Safe Handling and Use: This section will include any appropriate hygienic practices as well as procedures for the clean up of spills and leaks. Also included will be instructions for proper storage, which may include acceptable temperature, humidity levels and ventilation requirements.
- Exposure Control Measures: This section will list various methods to control an employee's exposure to the chemical. This includes engineering and work practice controls as well as specific information on personal protective equipment such as skin protection, eye protection and respiratory protection.
- As part of its Chemical Hazard Communication Program, the company maintains an MSDS for every chemical in the workplace; these important documents are available for employee review.
- You should review the MSDS before working with any chemical or anytime you have questions or concerns about safe work practices. Be sure to ask your supervisor if you are still unsure.

## **THE WRITTEN HAZARD COMMUNICATION PROGRAM**

- Your organization's Written Hazard Communication Program is a complete written plan specifying the organization's policies and procedures on container labeling, collection, storage and availability of Material Safety Data Sheets, a list and location of all hazardous chemicals as well as the location where employees have access to review the written plan and Material Safety Data Sheets.
- The written hazard communications plan has been created in compliance with the Occupational Safety and Health Administration's standard 1910.1200 titled "Hazard Communication."
- The written plan will detail specific guidelines for the training of employees who may be exposed to hazardous chemicals. This training will include the following: the location of any operations where hazardous chemicals are present, the location and availability of the written hazard communication program, the list of hazardous chemicals it contains and the location of all Material Safety Data Sheets.
- Employees will be trained in the methods and observations used to detect the presence or release of a hazardous material into the work area. Examples include explaining the monitoring systems used and any warning signals given.

- Employees will also be instructed in the visual appearance or odor of hazardous chemicals when released.
- Employees will be informed about a chemical's physical and health hazards as well as any required safe work practices and protective equipment.
- Finally, employees will be instructed how to locate and read chemical labels, Material Safety Data Sheets and the Written Hazard Communication Program in order that appropriate chemical hazard information may be readily obtained.

## **CONCLUSION**

- In our jobs, we may work with chemicals that are hazardous, but we don't have to place ourselves in danger. When armed with proper training and access to a chemical's hazard information each of us has the ability to work with or handle these chemicals in a safe manner.
- By following your organization's Hazard Communication Program, reading chemical labels and Material Safety Data Sheets and following the safe work practices listed, you create a successful formula for chemical safety.

## **PREPARE FOR THE SAFETY MEETING**

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.

## **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 explain the key elements of your organization's Hazard Communication Program so employees can work safely with hazardous chemicals on site.

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline. Lead discussions about specific chemicals used or stored at your facility and the safety precautions workers must take to handle them safely. 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 identify the following:

- What substances are considered "hazardous chemicals" and how they can enter the human body;
- What information can be found on a manufacturer's chemical label;
- What information is conveyed on NFPA and HMIS labels;
- What data is contained in the most common sections of a Material Safety Data Sheet;
- How the company's Hazard Communication Program works to protect employees from exposures to hazardous chemicals.

## **HAZARD COMMUNICATION TRAINING FOR EMPLOYEES** ***REVIEW QUIZ***

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

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

1. Which type of health effects occur over time after repeated exposures?
  - a. acute
  - b. chronic
  
2. \_\_\_\_\_ occurs when a chemical comes in contact with the exposed skin, eyes or mucus membranes.
  - a. Absorption
  - b. Inhalation
  - c. Ingestion
  
3. All chemical manufacturers are required to use a standard set of symbols on their container labels to indicate a substance's hazards.
  - a. true
  - b. false
  
4. Which area of the NFPA label is used represent a chemical's reactivity?
  - a. blue
  - b. red
  - c. yellow
  
5. What does an asterisk on the blue bar of an HMIS label indicate?
  - a. the material is highly flammable
  - b. the material is a carcinogen or has chronic health effects
  - c. the material will react with water
  
6. Which label ***does not*** provide information on required protective equipment?
  - a. NFPA
  - b. HMIS
  
7. A small, portable container of a transferred chemical doesn't have to be labeled as long as it is being used immediately by the employee who performed the transfer.
  - a. true
  - b. false
  
8. In general, the lower the flashpoint listed on an MSDS, the less flammable the substance is.
  - a. true
  - b. false

***ANSWERS TO THE REVIEW QUESTIONS***

1. b

2. a

3. b

4. c

5. b

6. a

7. a

8. b