

## **HIGH-IMPACT HAZARD COMMUNICATION 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 as well as identify the program participants. The attendance record may be copied as needed.

### **INTRODUCTION**

In an effort to protect you from the dangers posed by hazardous chemicals used at your facility, the company has developed a Hazard Communication program. This program is detailed in a written plan located inside your workplace that is designed to provide you with all the information you need to work with hazardous substances safely. This plan alone, however, will not prevent injuries caused by dangerous chemicals. Employees must be constantly aware of the potential dangers involved with chemicals and must always follow safe handling procedures in order to stay safe on the job.

The eight accident reenactments in this video show viewers that failure to understand chemical hazards on the job often results in horrific, life-altering injuries. The video stresses the point that workers must follow all safe work procedures outlined in the company's Hazard Communication program to prevent tragedies such as these. Training topics include reading container labels, understanding Material Safety Data Sheets, selection and use of PPE, proper storage of chemicals, health effects of exposures, routes of entry, emergency evacuation and warning signs.

### **PROGRAM OUTLINE**

#### **BACKGROUND**

- Contact with these chemicals may produce immediate as well as cumulative effects and can result in mild irritations to chronic disease or death.
- A chemical is considered to be hazardous if it presents a physical or health hazard.
- Chemicals that produce health hazards include carcinogens, neurotoxins, sensitizers, irritants, corrosives and other substances that can damage body systems and organs.
- Some chemicals that present physical hazards include flammables, combustibles, oxidizers, water-reactive material, organic peroxides, pyrophoric substances and all compressed gases.
- You should be aware of chemicals that are by-products generated from operations in the workplace: fumes from soldering, motor exhaust and grindings from metal or wood products.
- Hazardous substances have three routes of entry into your body: ingested or swallowed, inhaled as you breathe or through contact with your skin.

## **THE WRITTEN HAZARD COMMUNICATION PLAN**

- Located in your company is a written Hazard Communication plan that contains information about all aspects of your Hazard Communication program.
- Included in this information is a list of hazardous chemicals, a description of the secondary labeling and warning system, and a list of current Material Safety Data Sheets.
- It also describes how non-routine jobs are to be handled and other necessary information about chemical safety.
- The plan will detail the chemical labeling system your facility uses to inform you of any hazards associated with a substance.
- Every chemical brought into the facility has a manufacturer's label and is accompanied by the manufacturer's MSDS.
- If you are unsure about hazardous chemicals on your job, consult the Hazard Communication plan.

## **EMPLOYEE TRAINING**

- Much of employee training involves understanding the chemicals at work through the use of three sources of information: labels on containers, MSDS's and the company's Hazard Communication plan.
- Most of the training we receive revolves around chemicals we work with regularly, but we must also understand the nature of chemicals in other areas. This includes materials enclosed in pipes and tanks, many of which are labeled.
- You must be re-trained every time a new chemical is introduced on your job.

## **CONTAINER LABELS**

- Labels on containers provide immediate information about health and safety hazards. We are responsible for reading and understanding this information.
- Labels may have different formats, but they essentially all provide the same information.
- The label will include the name of the chemical or its identity. It may also contain the name, address and phone number of the manufacturer or importer.
- You might find a signal word such as "caution", "warning" or "danger." Danger is the most severe hazard and caution is the least.
- The word poison identifies a highly toxic chemical and is used in combination with one of the other warning words.
- The label will also indicate if the chemical is a physical hazard, such as an explosive, flammable, corrosive or reactive substance.
- Health hazards such as irritation to the eyes, lungs or skin or other possible illnesses may also be listed on the label.
- Some labels carry additional warnings and may include special precautions, personal protective equipment, first aid instructions, emergency procedures and instructions for handling, storage and disposal.
- NFPA and HMIS labels provide a rating system for health, flammability and reactivity by using a scale of zero to four. Zero is the least hazardous, while four is the most severe.

## **SECONDARY LABELS**

- In addition to the primary label, a secondary label can be used in many instances on small containers and transfer cans.

- When chemicals are transferred from a primary container to a secondary, the secondary container must be labeled properly.
- The secondary container's label should include the chemical name, parts of the body that could be damaged due to exposure, flammability and reactivity data, necessary personal protection and any other health hazards.

### **MATERIAL SAFETY DATA SHEETS**

- While chemical labels provide immediate hazard warnings, Material Safety Data Sheets contain detailed information about workplace chemicals.
- Your company maintains copies of each chemical's MSDS used in the plant and they are available to you while you are at work.
- In addition to traditional paper copies, MSDS's can also be stored on computers and microfiche. Ask your supervisor if you have any questions about access to the type your company uses.
- Nine basic areas of information are detailed on all MSDS's.
- One section has the name of the chemical and the trade name as well as the manufacturer's or importer's name. Also listed will be the address and contact number where additional information can be found.
- Another section lists hazardous ingredients by percentage of total weight and includes their associated hazards. It also lists the nature of these hazards along with exposure limits.
- Physical data such as boiling or freezing points, density, specific gravity, solubility, general appearance, odor and reactivity can be found in another section.
- The MSDS has one section that indicates the fire and explosive hazards data. This may include freezing and flash points, upper and lower explosive limits, and any general firefighter information.
- Valuable information about health hazards is contained in another section of the MSDS. Signs of overexposure to target organs, medical conditions that could be aggravated by exposure and routes of entry may be covered in this section. The permissible exposure level (PEL) and threshold limit value (TLV) are also included.
- One section of the MSDS gives the reactivity data of the chemical, which includes stability, incompatibility with other chemicals and how the chemical reacts with water.
- Leaks and spills are covered in another section. This section has instructions about disposal and clean up of a chemical spill, including containment, absorption and neutralization.
- The MSDS also has a section that lists the control measures required for safe handling. This section describes the type of personal protective equipment that must be worn when using the chemical.
- Another section addresses the special precautions to be taken with the chemical. These may include special labeling, handling or storage requirements.

### **SAFE WORK PROCEDURES**

- When transferring flammable chemicals, make sure to follow proper grounding procedures.
- When storing small quantities of flammables and combustibles, make sure to use approved cans and lockable enclosures.
- Keep in mind that permissible exposure limits take into account any ventilation systems that are present. The actual PEL may be less if the ventilation system is off or not functioning properly.

- If hazardous waste cleanup is one of your job duties, make sure you always read the MSDS for the substance to be cleaned up. Never just guess which chemicals are safe. Also, make sure to dispose of waste in the prescribed manner.
- Always refer to the MSDS for control measures to be taken and protective equipment that must be worn before handling a hazardous chemical.

### **RESPONDING TO EXPOSURES TO HAZARDOUS CHEMICALS**

- If you are exposed to hazardous materials, you must take immediate steps to prevent additional damage.
- Make sure you know the location of the nearest safety showers and eyewashes.
- Flush the affected areas for at least 15 minutes. If clothing has been contaminated, remove it immediately.
- If a hazardous substance has been ingested, check the MSDS for the proper emergency procedures. Some chemicals require dilution with water or milk, while others require vomiting.
- In the event persons inhale hazardous fumes or gases, have them leave the area and get fresh air. Refer to the MSDS of the substances inhaled for the required emergency procedures.
- No matter what the exposure or contact, seek medical help as soon as possible. Some chemicals have long-term effects as well as immediate effects.

### **SUMMARY**

- Every chemical in the plant can be used without fear of injury, but only if used safely. Before working with any hazardous material, keep these things in mind:
  - ❶ Know and understand how to read and interpret container labels and Material Safety Data Sheets;
  - ❷ Be aware of the specific chemicals that you work with as well as other chemicals in the plant;
  - ❸ Know the correct personal protective equipment for the chemical you intend to use and the location of safety showers;
  - ❹ Be aware of the signs and symptoms of exposure to hazardous chemicals and the emergency procedures to follow;
  - ❺ Know the location of the Hazard Communication plan; and, if you have any questions about safety procedures, ask your supervisor.

## ACCIDENTS AND THEIR SAFETY LESSONS

### **Accident 1: Worker Receives Facial Burn After Using Incorrect Chemical**

Albert Jackson was preparing to add a new chemical to his tank so he could degrease parts as usual. His supervisor came to him with an MSDS for the new chemical and was about to go over it with him when he was called away to his office. Neglecting his supervisor's request that he wait until he returned, Albert proceeded to add the new product even though the label from the drum had fallen off. The wrong chemical had mistakenly been sent by the supply room and it reacted violently with the other chemicals in the tank. Albert received facial burns when the reaction splashed the chemicals into his face.

#### **Safety Lessons:**

- 1) Never use chemicals from an unlabeled container or make assumptions about chemicals in your work area.**
- 2) You must be re-trained before using any new chemical that is introduced on your job.**
- 3) Don't let haste or time restraints compromise your personal safety.**
- 4) Don't ignore your supervisor's instructions.**

### **Accident 2: Failure To Read Container Label Results in Chemical Burn And Nasty Fall**

Barry Revonski had been assigned by his supervisor to service an air conditioning unit on the roof of the plant. Although he hadn't performed this particular job in a while, he quickly determined that the coils needed cleaning and proceeded to get the cleaning agent he needed. He assumed that the chemical he found was precisely the same as he had used before and neglected to read the drum's label. The chemical had been changed since Barry last did the job and he was allergic to the new components. When he began to clean the coils, the excess spray began to burn his skin. He then dropped the container of cleaner and ran for the safety shower. Hopping on one foot while trying to remove his clothing, he fell off the roof and down to a lower platform.

#### **Safety Lessons:**

- 1) Always read the container label of any chemical before use.**
- 2) Be aware of your allergies and take the proper precautions. Had Barry checked the MSDS, he would have known not to use the chemical without additional PPE.**

### **Accident 3: Production Worker Engulfed In Explosion While Transferring Flammable Chemicals**

Juan Gonzales was preparing to draw some flammable liquid cleaner out of a drum. After attaching the ground clip to the can and placing it under the spout, he discovered that the drum was empty. He then rushed over to another drum of the same substance and began to draw out the chemical. Because he was in a hurry, he forgot to put the ground clip on the secondary container this time. A spark ignited a terrible explosion.

#### **Safety Lessons:**

- 1) Always follow prescribed safety procedures.**
- 2) Never let being in a hurry shortchange your safety.**
- 3) Treat flammable chemicals with respect; follow all safety rules.**

### **Accident 4: Inadequately Protected Worker Loses Consciousness In Paint Booth**

Joan Delahaney prepared to return to the paint booth where she worked to change out the fitting on the paint supply hose. When she reached for her respirator, she realized she was out of the proper cartridges for the booth and grabbed a dust mask instead. Planning only to be in the booth for a short time, she entered and began to remove the connection. Not only did she not expect the fitting to be stuck, but she had also forgotten that the ventilation system to the booth was down. While attempting to remove the fitting, she lost consciousness and fell to the floor. Fortunately, her supervisor walked by the booth and discovered her lying there. She was lucky to have only minor injuries.

#### **Safety Lessons:**

- 1) Always wear the required PPE for the job, even if you expect the task to take only a very short time to perform.**
- 2) Understand that there are a variety of respirator cartridges and you must use the one for your job.**
- 3) Don't let convenience kill your safety. Joan should have gone to supply for the correct cartridge.**

### **Accident 5: Use of Wrong Material During Acid Waste Clean Up Causes Explosion**

Warren Badger and Jamison Curly were cleaning up a puddle of acid that had formed under a 1,500-gallon storage tank. When the first bag of neutralizer ran out, they looked in the spill cart for a second bag. Unable to locate another bag, they did find a bag of caustic beads and assumed that the beads would neutralize the acid. When Jamison added the beads to the acid, a violent reaction occurred and the resulting explosion blew him back into a wall.

#### **Safety Lessons:**

- 1) *Follow correct cleanup procedures for spills. Check the MSDS if in doubt.*
- 2) *Understand that chemicals can have violent and sudden reactions. Read labels and the MSDS for complete information.*

### **Accident 6: Unprotected Worker Sprayed In Face With Chemical When Wrench Slips Off Bolt**

Carl Winiarski and Roger Kennedy were checking newly installed process lines that ran from the railcar receiving area. The two maintenance workers didn't see any problems with the new lines until Carl discovered a drip at one of the flanges. Even though Roger noted that they didn't have the proper PPE and a line-breaking permit required to repair the leak, Carl proceeded to tighten the bolt at the gasket. When the oversized wrench Carl was using slipped off the bolt, it knocked off a gauge attached to the line and the pressurized chemical sprayed into his face. Carl's injuries could have been much worse had Roger not promptly gotten him to a safety shower.

#### **Safety Lessons:**

- 1) *When working with chemicals, always know the location of the nearest eyewash station and emergency shower.*
- 2) *If exposed to hazardous chemicals, take immediate action to limit the damage.*
- 2) *Always wear the PPE required for the task you are performing.*
- 3) *Always use the correct tool for the job.*

### **Accident 7: Forklift Driver Hits Chlorine Line**

Charlie Morris was placing chemical containers in the production area. He had forgotten about new chlorine lines that had just been installed in the area. As he backed out from unloading container, the forklift clipped a valve on one of the chlorine lines. Smelling the gas being emitted, he immediately ran to an alarm, sounded it and ran to safety. Because of his swift action and the orderly evacuation of fellow employees, no one was injured.

#### **Safety Lessons:**

- 1) *Be aware of chemicals used in your workplace, even if you don't use them.*
- 2) *Be alert to smells and other indications of a chemical release.*
- 3) *Know emergency and evacuation procedures.*

### **Accident 8: Drum Of Mixed Chemicals Explodes After Being Heated By The Sun**

Kelly Strummond, a forklift operator, collected waste oil on a regular basis and placed it in the drum storage area. One day, a fellow employee asked him to collect some chemicals for him and take them to the storage area. Kelly didn't read the label on one of the containers and combined the chemical with the waste he already had in a drum. He then took the drum to the storage area and the next day it was heated by the hot sun. A chemical reaction was started that resulted in a huge explosion and serious injuries to Kelly and co-workers.

#### **Safety Lessons:**

- 1) *Always read labels on containers or drums.*
- 2) *Never combine unknown chemicals.*
- 3) *Always think about the consequences of your actions.*

## **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 motivate employees to be aware of the potential dangers involved with chemicals and always follow safe work practices when working with and around hazardous materials.

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline. Copy the "Accidents and Their Safety Lessons" portion of this leader's guide and hand out to the participants.

Lead discussions about job tasks and work areas at your facility where chemicals are used and stored and the specific hazards they present. Ask participants how such incidents could have been prevented. 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 contained in the company's written Hazard Communication plan;
- Data provided on container labels and MSDS's and the importance of reading this information before using a chemical;
- Safe work practices for handling and storing hazardous materials;
- How to respond to exposures and other emergency situations involving chemicals.

## **HIGH-IMPACT HAZARD COMMUNICATION TRAINING REVIEW QUESTIONS**

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

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

1. After initial training on hazardous chemicals in your work area, you are required to receive re-training each time \_\_\_\_\_.
  - a. an injury involving a chemical occurs
  - b. a spill or leak of a chemical occurs
  - c. a new chemical is introduced on your job
  - d. a new supervisor comes on the job
  
2. Labels on containers come in different formats, but they all basically provide the same information.
  - a. true
  - b. false
  
3. How do hazardous substances enter the human body?
  - a. inhaled from the air
  - b. swallowed or ingested
  - c. through contact with the skin
  - d. all of the above
  
4. What is the least amount of time you should flush your eyes if you are splashed by a chemical?
  - a. 30 seconds
  - b. 1 minute
  - c. 5 minutes
  - d. 15 minutes
  
5. When transferring a hazardous chemical from a primary container to a secondary container, the secondary container doesn't need a label as long as the primary container has one.
  - a. true
  - b. false
  
6. Which of the following information would you not expect to find on an MSDS for a chemical?
  - a. reactivity data
  - b. how to respond to leaks and spills
  - c. how your company's labeling system works
  - d. fire and explosive hazards
  
7. Which of the following signal words on a container label indicates the most severe hazard?
  - a. caution
  - b. warning
  - c. danger
  
8. A chemical is considered hazardous if it \_\_\_\_\_.
  - a. presents a health hazard
  - b. presents a physical hazard
  - c. smells bad
  - d. both a and b

***ANSWERS TO THE REVIEW QUESTIONS***

1. c

2. a

3. d

4. d

5. b

6. c

7. c

8. d