

# HAZARD COMMUNICATION: *Behind the Scenes*

## Introduction

This Leader's Guide is designed to help you conduct a successful safety presentation. This Guide includes the following material:

**Video Overview:** A brief summary of the program content.

**Video Outline:** A more detailed overview of the program contents. You can refer to the outline when you talk about the video before or after it is presented.

**Preparing for and Conducting the Presentation:** Information that will help you prepare the training setting, help you relate the program to your specific work situation, and provide objectives for focusing your presentation.

**Discussion Ideas:** A number of ideas that can help encourage discussions related to the topic of the video.

**Review Questions and Answers:** A quiz that may be copied and given to participants as a record of their attendance and to document how well they understood the information that was presented. Answers to the review questions are provided separately.

## Video Overview *Behind the Scenes*

**Behind the Scenes** covers the key elements of Hazard Communication training for workers in general industry. The host of the video is a ghost who recently perished in a workplace chemical mishap. He has returned to the workplace with a mission to help other employees work safely with chemicals.

The video, **Behind the Scenes** addresses the following information:

- ❑ The roles and responsibilities of employers and employees in the development and implementation of a workplace Hazard Communication plan.
- ❑ The physical and health hazards chemicals can produce.
- ❑ The different ways that chemicals can enter our bodies, known as "routes of entry".
- ❑ The important information found on chemical labels
- ❑ Review of the information found on Material Safety Data Sheets

# Video Outline

## I. Introduction

The video begins with scenes of workers ending their shift and leaving a factory. The clock reads a few minutes past midnight and lights go out in various parts of the plant. Soon the ghostly host materializes in the empty building. He explains that it was only a few months ago when a mishap ended his life. We flash back in time to see the incident in which he is overcome by chemicals he accidentally spilled.

## II. Hazard Communication Standard

The Occupational Health Administration has developed a set of rules for working safely with chemicals called the Hazard Communication Standard, also known as the **Employee Right To Know Law**. The Hazard Communication Standard gives employers a set of guidelines for identifying chemical hazards and training employees about working safely with chemicals.

The employer's responsibilities include:

- ❑ Preparing a written hazard communication program
- ❑ Keeping an inventory of all of the hazardous chemicals in the workplace...
- ❑ Maintaining a file of up-to-date Material Safety Data Sheets where they are readily available to employees
- ❑ Making sure that all containers coming in have labels that identify their contents and include the appropriate warnings about their hazards
- ❑ And establishing programs to inform and train employees about chemical safety procedures.

## III. Chemical Hazards

Chemical hazards come in two categories: **health hazards** and **physical hazards**.

**Physical hazards** take place outside of our bodies and result in damage like burns, fires or explosions. Chemicals that produce physical hazards include combustibles, such as diesel fuel; flammables, such as turpentine; corrosives, such as acids and drain cleaner; explosives, such as grain dust, as well as compressed gases and chemicals that react violently with water or other chemicals

**Health hazards** can produce a wide range of symptoms, from minor respiratory or skin irritations... to serious, life threatening illnesses. Some chemicals can damage systems in the body, such as the reproductive, circulatory or nervous systems. Or they can damage specific organs, like the lungs, kidneys or liver.

The consequences of these health hazards can be **acute** or **chronic**. **Acute** means they affect us rapidly. **Chronic** effects occur over a long period of time, or after repeated exposures.

## **IV. Routes of Entry**

Chemicals enter our bodies, through what are called **routes of entry**. One of those routes of entry is the simple act of **breathing, or inhalation**.

- ❑ Flash back to a scene of Dave in the plant, working with a spray gun. He is wearing a respirator, but it isn't fastened correctly so he's breathing in fumes. So the ghost adjusts Dave's respirator.

Two other ways hazardous chemicals can enter our bodies is through the skin or eyes, called **absorption**, and by **swallowing, called ingestion**.

- ❑ Flash back to Carlos at work. He is cleaning a part with some solvent, but he's not using the protective gloves nearby, so the solvent is being absorbed through his skin. The ghost lifts the gloves into the air in front of Carlos, who then puts them on. Then Carlos is about to eat a sandwich without washing his hands. This would result in Carlos swallowing (ingesting) some of the solvent. So the ghost first transports Carlos to the washroom, where he washes his hands and then to the lunchroom, where Carlos eats his lunch.

## **V. Container Labels**

Labels can be found on practically every box, bag, barrel or canister that contains a hazardous chemical. The manufacturer or distributor attaches these labels to the original container.

- ❑ The labels identify the chemical that's inside, as well as the name of the manufacturer or distributor.
- ❑ An emergency phone number is often included.
- ❑ The labels will provide hazard warnings for the chemical, first aid information, and instructions about what to do in case of a spill.
- ❑ If the chemical is flammable or combustible, you'll find instructions on how to store the chemical and extinguish a fire.
- ❑ If it's caustic or corrosive, there will be instructions on proper storage and disposal.
- ❑ If a hazardous chemical is transferred to another container for use in the workplace, that container must also have a label that identifies the chemical, lists the hazards, and explains the safe use and handling of the chemical.
- ❑ Make sure labels remain visible and legible. If labels aren't in full view, or are damaged, you might be placing yourself or a co-worker in a hazardous situation.

Flash back to a young woman at work who is about to fill a smaller container with solvent from a large drum. The small container she is holding has a damaged label. The ghost intervenes by making a new label appear in mid-air in front of her. She grabs the label and applies it to the small container.

## VI. Material Safety Data Sheets

Another important source of information about chemicals is the **Material Safety Data Sheet, or MSDS**. MSDS's are provided by the manufacturers and distributors who supply chemicals to your workplace.

There is no standard MSDS format. But you'll usually see MSDS's that use either the Occupational Safety and Health Administration format, which has eight sections, or more often, the American National Standards Institute format, which has sixteen sections.

Here is an overview of the information found in an ANSI MSDS.

- ❑ **Section 1 - Product and Company Identification**, identifies the chemical by name, including its common name. Section One identifies the manufacturer and their address, gives you a list of contact numbers--including an emergency telephone number--and lets you know when the MSDS was written or revised.
- ❑ **Section 2 – Ingredients**, contains information about the chemical's composition and the ingredients that are hazardous. There is also information about "Exposure Limits". You'll see terms such as Permissible Exposure Limits, called PEL's and Threshold Limit Values, called TLV's. Both describe the maximum amount of a chemical that a person can be exposed to. The measurements are usually listed in parts per million, or milligrams per cubic meter.
- ❑ In **Section 3 - Hazards Identification**, you'll find information about potential health effects, routes of entry and what organs the chemical can damage once it enters the body. The signs and symptoms of overexposure will also be described.
- ❑ **Section 4 - First Aid Measures**, includes first aid instructions to follow as well as what kind of medical attention to get if you've been exposed to the chemical.
- ❑ **Section 5 - Firefighting Measures**, describes the type of fire extinguisher to use, firefighting procedures and specific fire or explosion hazards for the chemical. An important term often seen here is flash point, which is the lowest temperature that the vapors from a combustible liquid will easily ignite. The lower the flash point, the more hazardous the material. For example, charcoal lighter fluid has a flash point of 140°F, while gasoline has a flashpoint of about minus 45°F. That means that at temperatures warmer than -45, gasoline vapors easily ignite. The host demonstrates how gasoline ignites more easily than lighter fluid.
- ❑ **Section 6 - Accidental Release Measures**, tells us how to respond to spills or leaks. As an example, the video flashes back to Larry earlier in the workday when he accidentally spilled some chemicals. He has no idea how to respond to the spill, so the ghost magically provides all the PPE and clean-up materials Larry needs.

- **Section 7 – Handling and Storage**, deals with the proper handling and storage of the chemical. For example, it describes substances or situations that the chemical should be kept away from, such as high temperatures, sources of ignition, or rough handling.
- **Section 8 – Exposure Controls/Personal Protection**, describes the kind of exhaust ventilation and personal protective equipment that's necessary for the chemical.
- **Section 9 – Physical & Chemical Properties**, gives you a description of the specific properties of the chemical, including its appearance and what kind of odor it gives off. Vapor Density is a term often found here that tells you whether a gas or vapor is lighter or heavier than air. If the vapor density is less than one, it's lighter than air and would rise to the ceiling. Greater than one, means it's heavier than air and would drift down to the floor. If the vapor is toxic or flammable and it stays near the floor, there is a greater risk of ignition or breathing the vapor. Specific Gravity is another term often seen in this section. It tells us how dense a material is in relation to water. Water has a specific gravity of 1. If the specific gravity of a material is less than one it will float on water. Greater than one? Down it goes.
- **Section 10 – Stability and Reactivity**, provides information about the stability of the chemical, conditions to avoid, and how the chemical reacts to temperatures, pressures or other chemicals.
- **Section 11 - Toxicological Information**, describes the poisonous effects the chemical can have on the human body. There are terms like teratogen and mutagen, referring to birth defects or damage to the cells in our bodies. Another term, carcinogen, describes whether the chemical has been identified as cancer causing.
- **Section 12 – Environmental Information**, describes how the chemical can affect the environment.
- **Section 13 – Disposal Considerations**, explains procedures for the proper disposal of the chemical.
- **Section 14 – Transport Information**, describes any transportation considerations and whether or not the material is considered a hazardous material by the Department of Transportation.
- **Section 15 – Regulatory Information**, includes any special regulations the chemical is subject to.
- **Section 16 – Other Information**, can include things like National Fire Protection Association hazard information, when the MSDS was written or revised, and other information from the manufacturer.

#### **IV. Chemicals in Our Homes**

Think about all the cleaning chemicals in our kitchens and bathrooms. Think about the solvents, paints and thinners stored in basements and garages. It's important to

remember that the same precautions that apply at the workplace apply at home as well.

## **VIII. Conclusion**

Working around hazardous chemicals is serious business. If your work calls for the handling of these chemicals, you have the right to know all the information the manufacturer provides. Your employer's responsibility is to share that information and train you on the correct safety and emergency procedures. Your responsibility is to learn and follow those procedures.

## **Preparing for and Conducting the Presentation**

- ❑ Before presenting the video, review each section of this Leader's Guide and view the video before the presentation.
- ❑ Make sure the presentation area is quiet, has good lighting, unobstructed access and good climate control.
- ❑ Check the seating arrangement and the audiovisual equipment to ensure that all participants will be able to see and hear the videotape program. If extension cords are to be used, secure them in such a way that they won't become a tripping hazard.
- ❑ 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.
- ❑ Make everyone aware of the importance your organization places on protecting employee's health and safety and how everyone must be an active member of the safety team.
- ❑ Explain that the primary purpose of ***Behind the Scenes*** is to provide viewers with information about working safely with chemicals.
- ❑ Next, introduce the video and then play it without interruption.
- ❑ After the video is complete, you can tailor any discussion to your specific situations. You can refer to the **Discussion Ideas** section of this Guide for additional ideas. If you want to review the content of the program with participants you can refer to the **Program Outline** in this Guide.
- ❑ After the discussion, give a copy of the Quiz included in this Guide to the participants and ask them to complete the questions.
- ❑ Maintain copies of an attendance record and each participant's quiz as written documentation of the training performed.

## **Discussion Ideas**

In addition to discussion topics you may have planned, the following questions may be used to encourage discussions.

1. Describe some of the chemicals you work with in your day-to-day work.
2. Where can you find MSDS's for chemicals you work with?
3. Does anyone have a story about yourself or someone you know who was unintentionally exposed to a hazardous chemical? What caused the exposure and how was the person affected?
4. When transferring chemicals to a smaller container, what kinds of things could happen if the smaller container wasn't labeled correctly?
5. Can you describe some of the chemicals you use at home and the hazards they present?

# **Hazard Communication: *Behind the Scenes* Quiz**

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

1. Which of the following are the two categories of hazards produced by chemicals?
  - A. Physical
  - B. Emotional
  - C. Financial
  - D. Health
  
2. Which of the following are examples of physical hazards?
  - A. Fires
  - B. Vehicle crashes
  - C. Explosions
  
3. The ways that chemicals get into our bodies is called Routes of Entry. Which of the following are examples of Routes of Entry?
  - A. Swallowing (Ingestion)
  - B. Absorbed through the skin (Absorption)
  - C. Breathing (Inhalation)
  
4. It is the responsibility of manufacturers and distributors of chemicals to label chemical containers before they are shipped to the customer.
  - A. True
  - B. False
  
5. When transferring a chemical to a smaller container, it is not necessary for the smaller container to be labeled if you are the only person that will use the chemical.
  - A. True
  - B. False
  
6. All Material Safety Data Sheets have the same format.
  - A. True
  - B. False
  
7. The lower the flash point of a material, the more hazardous it is.
  - A. True
  - B. False
  
8. A material with a specific gravity greater than one will float on water.
  - A. True
  - B. False



## Quiz Answers

1. A, D

2. A, C

3. A, B, C

4. A, True

5. B, False

6. B, False

7. A, True

8. B, False