HAZARD COMMUNICATION & THE GLOBAL HARMONIZING SYSTEM EMPLOYEE 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.

INTRODUCTION

Recent changes in OHSA's Hazard Communication Standard have brought the regulation more in line with international standards with the implementation of the Global Harmonizing System. Implementing the Global Harmonizing System, or GHS, helps ensure improved quality and consistency in the classification and labeling of all chemicals, which in turn improves an employee's ability to quickly understand critical safety information. This program is designed to help employees understand the three key elements of the GHS: Hazard Classification, container labeling and Safety Data Sheets.

Topics include the written Hazard Communication plan, physical and health hazard classes, pictograms, signal words and other information found on GHS container labels and the 16 sections of a Safety Data Sheet.

PROGRAM OUTLINE

BACKGROUND

- Hazardous chemicals—they are found in more than 7 million workplaces and over 55 million employees handle, use or work around these potentially harmful substances throughout North America.

- While these substances are essential to many work processes in a variety of industries, they can also be very dangerous.

- Effects from worker exposure to hazardous chemicals can range from mild skin irritation to severe burns to the eyes or skin to death from various types of exposure.

- Hazardous chemicals can also be highly toxic, flammable or even explosive.

- Because of the dangers presented by hazardous chemicals, The Occupational Safety and Health Administration, OSHA, developed the Hazard Communication Standard, CFR 1910.1200.

- OSHA's regulation requires companies to develop a Hazard Communication Program which communicates the hazards of workplace chemicals to all employees.

THE WRITTEN HAZARD COMMUNICATION PLAN

- Your organization's Hazard Communication Program must include a written plan. This written plan specifies the policies, procedures and essential elements of the Hazard Communication Program such as container labeling, the collection, storage and availability of Safety Data Sheets and a listing of all hazardous chemicals on-site as well as their location.

- The written plan will also detail specific guidelines for the training of employees. For example, employees will receive specific training based on the hazardous chemicals to which they may be exposed.

• Some examples of specific chemical training which you may receive include the methods used for monitoring the presence of hazardous chemicals and the warning signals used to indicate a leak or spill; the physical and health hazards of chemicals used in your work area and the safe work practices and personal protective equipment used to prevent exposure; and how to read the important information found on chemical labels and Safety Data Sheets and the locations on-site where Safety Data Sheets and the written plan may be accessed.

• All of this information may be found in your organization's written hazard communication plan. The written plan is an important document which all employees have a right to review upon request.

THE GLOBAL HARMONIZING SYSTEM (GHS)

• OSHA's Hazard Communication Standard was first enacted in 1983; however, recent changes have brought the regulation more in line with international standards with the implementation of the Global Harmonizing System, or GHS for short.

• Implementing the Global Harmonizing System helps ensure improved quality and consistency in the classification and labeling of all chemicals. This in turn improves an employee's ability to quickly understand critical safety information.

• Created by the international community and adopted by the United Nations, the Global Harmonizing System provides a single set of harmonized criteria for classifying chemicals and mixtures according to their health, physical and environmental hazards.

• The Global Harmonizing System improves hazard communication by specifying communication elements, such as signal words, pictograms and precautionary statements, which are used on container labels or Safety Data Sheets.

HAZARD CLASSIFICATION

• Hazard Classification is the process of assigning a chemical or mixture to a hazard or danger category based on its health and physical hazards.

• Physical hazards are the properties of a gas, liquid or solid that could adversely affect you or the workplace in a physical way, such as a fire or explosion.

• Health hazards are determined by the properties of a substance or mixture that can cause illness or injury to the skin, eyes, lungs or other organs and body parts.

• Because there are such a large variety of hazardous chemicals, there are also a large variety of physical and health hazards presented by these chemicals.

• To better communicate the specific information needed by chemical workers, the Global Harmonizing System has created multiple classes of hazards. There are 16 classes of physical hazards and 10 classes of health hazards.

• The 16 classes of physical hazards include explosives, flammable gases, aerosols, oxidizing gases, gases under pressure, flammable liquids, flammable solids and self-reactive substances and mixtures.

• Other physical hazard classes include pyrophoric liquids, pyrophoric solids, self-heating substances and mixtures, substances and mixtures emitting flammable gases when contacting water, oxidizing liquids, oxidizing solids, organic peroxides and substances corrosive to metal.

• The 10 classes of health hazards include acute toxicity, skin corrosion and irritation, serious eye damage or eye irritation, respiratory or skin sensitization and germ cell mutagenicity.

• Other health hazard classes include carcinogenicity, reproductive toxicology, specific target organ toxicity from a single exposure, specific target organ toxicity from repeated exposures and aspiration hazard.

• Of course, you may not be familiar with many of these terms and you may never work with or handle chemicals in many of these hazard classes; however, it's important for you to understand that the existence of the various GHS hazard classes makes it easier for you to receive the specific training and important information you need to work safely with the chemicals which are located in your workplace.

CONTAINER LABELS

• Container labels will provide information on the relevant hazard classifications of the chemical. The labels which conform to the Global Harmonizing System may be quite different from the traditional labels you may be accustomed to seeing, so it is important to become familiar with them and the important information they deliver.

• As part of the Global Harmonizing System, chemical manufacturers and importers are required to provide a label that includes a pictogram, harmonized signal word, hazard statements and precautionary statements for each hazard class and category.

• Remember, the GHS standardizes all of this information based on hazard category and class to ensure that all workers, worldwide, receive consistent chemical safety information.

USE OF PICTOGRAMS ON CONTAINER LABELS

• Pictograms are standardized graphics, sometimes called harmonized hazard symbols, which are assigned to a specific hazard class or category. Pictograms on a GHS label may convey health, physical or environmental hazard information.

• Each pictogram is assigned to only one class of hazard. A pictogram will represent either a physical hazard, health hazard or environmental hazard.

• Keep in mind that there is not a unique pictogram for each individual hazard within each class. In other words, one pictogram may be used to represent several hazards within a class.

PHYSICAL HAZARD PICTOGRAMS

• There are five pictograms displayed on GHS labels to represent physical hazards of a chemical.

• The exploding bomb pictogram is used to signify a material as an explosive, unstable explosive organic peroxide or a self-reactive substance or mixture.

• The flame pictogram is used for flammable gases, liquids, solids and aerosols as well as self-reactive substances. It may also indicate a material is an organic peroxide, pyrophoric liquid or solid, a self-heating substance or mixture or emits flammable gases when it makes contact with water.

• The flame over circle, or oxidizer pictogram, appears on a label when a chemical is an oxidizing gas, liquid or solid.

• The gas cylinder pictogram is exhibited when a substance is a compressed, liquefied, refrigerated liquefied or dissolved gas.

• The corrosion pictogram indicates a material is corrosive to metal.

HEALTH HAZARD & ENVIRONMENTAL PICTOGRAMS

• The corrosion pictogram is also used to denote the health hazards of skin corrosion and serious eye damage.

• Besides corrosion, there are three other health hazard pictograms. The skull and crossbones is used when a chemical is acutely toxic to the skin, lungs or digestive system.

- The health hazard pictogram, sometimes called the chronic health hazard pictogram, denotes respiratory sensitization, germ cell mutagenicity, carcinogenicity, reproductive toxicity or an aspiration hazard. It is also used when a substance can cause specific target organ toxicity following a single or repeated exposures.

- The exclamation point pictogram is used for the health hazards of acute toxicity, skin irritation, eye irritation, skin sensitization and specific target organ toxicity following a single exposure in the form of narcotic effects or a respiratory tract infection.

- The exclamation point is not to be used in conjunction with the skull and crossbones pictogram. It also is not used for skin or eye irritation if the corrosion pictogram also appears or if the health hazard pictogram is used to indicate respiratory sensitization.

- A third type of pictogram is used to indicate environmental hazards. This single pictogram is used when a substance poses acute or chronic hazards to the aquatic environment.

TRANSPORTATION PICTOGRAMS

- Pictograms are also used when chemicals are being transported; however, the pictograms used during transport are different from those found on labels.

- Transportation pictograms still feature the harmonized hazard symbols; however, the background, border and colors used on the transport pictogram come from in the United Nations Recommendations on the Transport of Dangerous Goods.

- Your specific chemical training, as well as your company's written plan, will include an explanation of the pictograms associated with the chemicals in your work environment. This knowledge helps workers quickly identify a chemical's hazards and is the first step to taking proper precautions to work safely.

SIGNAL WORDS

- There are two signal words that appear on GHS container labels. The words "Danger" or "Warning" are used to emphasize hazards and indicate the relative level of severity of the hazard.

- The signal word "Danger" represents a more severe hazard than the signal word "Warning". Only one signal word, corresponding to the class of the most severe hazard, should be used on a chemical label.

- Keep in mind that some hazard classes have not been assigned a signal word; therefore not all labels will have a signal word.

HAZARD & PRECAUTIONARY STATEMENTS

- Other standardized communication elements found on GHS container labels are Hazard Statements and Precautionary Statements.

- Hazard Statements are standard phrases assigned to a hazard class and category that concisely describe the nature of the hazard. For example, the Hazard Statement for an eye irritant may be "Causes eye irritation" while the Hazard Statement for a substance with acute inhalation toxicity may be "Toxic if inhaled."

- For products which pose more than one risk, an appropriate hazard statement for each GHS hazard will be included on the chemical label.

- Chemical labels will also contain Precautionary Statements. Precautionary Statements are standardized explanations of the measures to be taken to minimize or prevent adverse effects.

- There are four types of precautionary statements for each hazard class: prevention, response, storage and disposal.

- Some examples of “Prevention” precautionary statements include “Do not allow contact with water” and “Wear protective gloves.”

- Some examples of “Response” precautionary statements include “If on skin wash with plenty of water” and “If inhaled remove person to fresh air.”

- Some examples of “Storage” precautionary statements include “Store in well ventilated place” and “Protect from sunlight.”

- “Disposal” precautionary statements typically state to “Dispose in accordance to local regulations.” Disposal precautions are an area the United Nations plans to further develop in the future.

OTHER LABEL COMPONENTS

- The product identifier is the name or number used for a hazardous substance and the label should include the chemical identity of the substance. It should match the same identifier in the Safety Data Sheet for the product.

- Also included on the label will be the supplier identification. The name, address and telephone number should be provided.

- Finally, the label may list supplemental information such as non-harmonized data that is not required or specified under the GHS. Supplemental information may be used to provide further detail; however, it must not contradict or cast doubt on the validity of the standardized hazard information.

- The pictograms, signal words, hazard statements and precautionary statements are standardized based on a chemical or mixture’s hazard category and class as defined by the GHS.

- If needed, a reference guide to the GHS, which includes a detailed explanation of this information, has been published by the United Nations. It is titled “A Guide to the Globally Harmonized System of Classification and Labeling of Chemicals;” however, it is commonly called “The Purple Book.”

- While it is not necessary for chemical workers to have complete understanding of the entire Global Harmonizing System, they must understand the elements of the system used to communicate the hazards presented by the chemicals in their workplace.

SAFETY DATA SHEETS

- Required by OSHA’s original Hazard Communications Standard, Material Safety Data Sheets have been the comprehensive source of safety information about specific chemicals; unfortunately, these valuable documents came in a wide variety of styles and formats making them hard to read and understand quickly.

- As part of the Globally Harmonized System, they are now called “Safety Data Sheets” and have a uniform format that allows employees to obtain concise, relevant and accurate information more easily.

- All Safety Data Sheets will have the following 16 sections, in specific order, so workers will always know which section will provide which data no matter what chemical you are referencing.

- Section 1: Product and Company Identification—This section provides the product name and use, the manufacturer and a number to call in case of an emergency.

- Section 2: Hazards Identification—Health, environmental and physical hazards are listed in this section. Also shown are the GHS standard and transport pictograms as well as the hazard and precautionary statements found on the container label.

- Section 3: Composition/Information on Ingredients—This section gives the components of the substance and their concentration as well as their Chemical Abstract Service numbers, European Commission numbers and European Chemical Agency numbers.

- Section 4: First Aid Measures—Treating chemical exposures such as contact with the eyes and skin, inhalation and ingestion are covered in this section.

- Section 5: Firefighting Measures—This section lists the appropriate and inappropriate fire extinguisher agents to be used in the event of a fire, the exposure hazards, the combustion products and the personal protection to be worn by firefighters.

- Section 6: Accidental Release Measure—Personal precautions, environmental precautions and methods for clean up in the event of a spill are explained in this section.

- Section 7: Handling and Storage—This section provides the procedures for safe handling and storage of the chemical.

- Section 8: Precautions to Control Exposure/Personal Protection—Exposure limits and the controls and monitoring required to prevent exposure above these limits are listed in this section. Also, the necessary personal protection needed to prevent exposure is also included.

- Section 9: Physical and Chemical Properties—This section contains the various properties of the substance, such as appearance, odor, flash point, specific gravity, flammability limits and vapor density.

- Section 10: Stability and Reactivity—Such issues as stability, hazardous decomposition products, conditions to avoid and incompatible materials are discussed in this section.

- Section 11: Toxicological Information—This section explains the routes of entry to the human body as well as the symptoms and effects of exposure to the chemical.

- Section 12: Ecological Information—Provided in this section is information on the product's effect on plants or animals and its ultimate environmental disposition.

- Section 13: Waste Disposal Considerations—This section discusses how to safely dispose of the chemical.

- Section 14: Transport Information—The proper shipping name, hazard class, UN Identification Number, Transport Label required and other information required for transporting the product are listed in this section.

- Section 15: Regulatory Information—This section documents the chemical's classification under federal regulations such as the Toxic Substances Control Act, the Clean Water Act and the Superfund Amendments and Reauthorization Act among others. It may also include applicable state and international regulations as well as European Union classification and EU risk and safety phrases.

- Section 16: Other Information—The final section allows chemical manufacturers to provide information not found in the first 15 sections. This may include such things as the manufacturer's email address, the intended use of product, what agency issued the data sheet, date of issue, a full explanation of risk and safety phrases, just to name a few.

- Your facility maintains a Safety Data Sheet for every chemical in the workplace as part of its Hazard Communication Program. You should review the SDS before working with any chemical or anytime you have concerns about safety issues.

- Always ask your supervisor if you have any questions about a chemical label or Safety Data Sheet.

PERSONAL PROTECTIVE EQUIPMENT

- Of course, always wear the proper protective equipment specified by the container label or Safety Data Sheet. This often includes wearing gloves, protective clothing and goggles with a face shield.

- Respiratory protection may also be required to avoid breathing in hazardous fumes.

- If you are unsure about the required PPE for any chemical, stop and ask your supervisor.

PREPARE FOR THE SAFETY MEETING
Review each section of this Leader's Guide as well as the DVD or digital media. 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 program and then play it without interruption. Review the program content by presenting the information in the program outline.

Here are some suggestions for preparing your video 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 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 to discuss the protective devices we can use as well as the precautions we can take to prevent debilitating eye injuries.

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

Lead discussions about specific eye injury hazards at your facility and the protective devices and precautions employees can utilize to protect their eyes from those hazards.

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

- What the written hazard communication plan and the Global Harmonizing System are;
- What health and physical hazard classes are;
- What information can be found on GHS chemical container labels;
- What information is contained in the 16 sections of a Safety Data Sheet.

HAZARD COMMUNICATION
& THE GLOBAL HARMONIZING SYSTEM EMPLOYEE TRAINING
REVIEW QUIZ

Name_____Date_____

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

1. An organization's Hazard Communication Program is not required to have a written plan.

a. true
b. false

2. Skin sensitization is an example of a _____ hazard class.

a. health
b. physical

3. One pictogram may be used represent several hazards within a class.

a. true
b. false

4. Which pictogram is the only one that is used to indicate either a physical or health hazard?

a. skull and cross bones
b. exclamation point
c. corrosion

5. Which signal word on a label represents the more severe hazard?

a. Danger
b. Warning

6. Which type of precautionary statement on a label is to be developed further by the United Nations in the future?

a. Prevention
b. Response
c. Storage
d. Disposal

7. The 16 sections of GHS Safety Data Sheets may be listed in any order that the agency issuing the document chooses.

a. true
b. false

8. Which Safety Data Sheet section includes a substance's Chemical Abstract Service Number, European Commission number and European Chemical Agency number?

a. the Composition/Information on Ingredients section
b. the Transport Information section
c. the Regulatory Information section

9. Your facility maintains a Safety Data Sheet for every hazardous chemical in the workplace.

a. true
b. false

ANSWERS TO THE REVIEW QUESTIONS

1. b
2. a
3. a
4. c
5. a
6. d
7. b
8. a
9. a