Hazard Communication

Disclaimer

- This training material presents very important information.
- Your organization must do an evaluation of all exposures, applicable codes and regulations and establish proper controls, training and protective measures to effectively control exposures and ensure compliance.
- This program is neither a determination that the conditions and practices of your organization are safe nor a warranty that reliance upon this program will prevent accidents and losses or satisfy local, state or federal regulations.
- All procedures and training, whether required by law or not, should be implemented and reviewed by safety and risk management professionals and legal counsel to ensure that all local, state and federal requirements are satisfied.

Hazard Communication—Course Outline

1. Why Take Hazard Communication Training?
2. Criteria for a Hazard Communication Program
3. Globally Harmonized System (GHS)
4. The Written Program
5. Hazardous Materials Inventory
6. Employee Training
7. Hazardous Materials and Your Body
8. Understanding Exposure Limits
9. Hazard Classification

Hazard Communication—Course Outline

10. Exposure Controls
11. Pictograms
12. Container Labeling
13. Other Labeling Requirements
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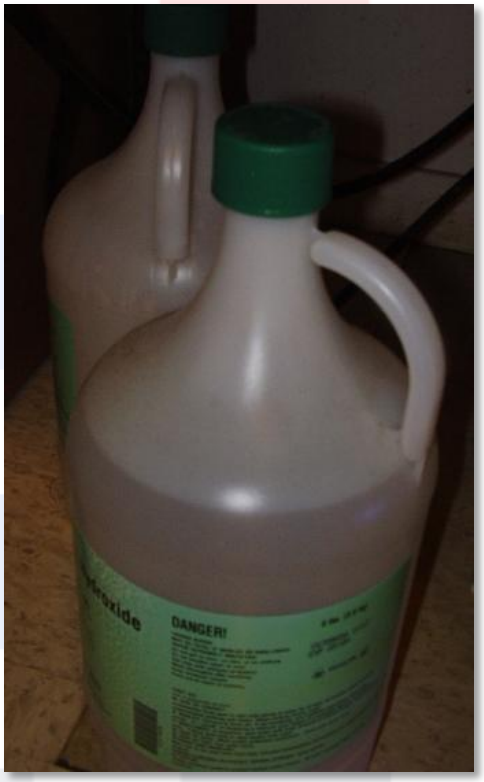
Why Take Hazard Communication Training?

Hazard communication training is essential in creating a safe work environment.

By the end of this training program, you will:

- Know how to recognize and manage the hazardous materials in your work area.
- Understand the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).



Applying this knowledge will improve workplace safety.

Why Take Hazard Communication Training?

- **Laws:** Most developed countries have laws regarding the use of hazardous chemicals in the workplace. Many of these laws are based on the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

- **Magnitude of the chemical industry:** Chemicals affect all aspects of life. Having immediately available information on the hazardous properties of chemicals is crucial for protecting human health and the environment.

- **Protecting personnel:** Training ensures that employees are informed about the hazards associated with the chemicals they work with and know how to protect themselves.

- **Saving money:** Your organization will realize bottom line cost savings when avoiding fines, incidents and injuries.

Criteria for a Hazard Communication Program

The Hazard Communication Standard of 2012:

- Modifies the existing standard. As OSHA explains, not only do employees have the right to **know** but also the right to **understand** the hazards of each chemical.
- Keeps the performance-oriented focus of the old standard, but presents uniform guidelines for the classification and presentation of chemical hazards.
- Ensures that employees are taught about the hazards associated with their work.
- Requires employers to train employees in the proper handling of hazardous materials to prevent harmful exposure.

Criteria for a Hazard Communication Program

Requirements for a hazard communication program:

- Each employer must have a written hazard communication program.
- All employees must receive hazard training.
- An inventory of all hazardous substances in the workplace must be maintained.
- All containers of hazardous products must be properly labeled.
- Manufacturers and suppliers must provide written information on the hazards of the materials they produce or supply. This information is provided on Safety Data Sheets (SDSs).
  - SDSs must be accessible to employees, visitors and contractors.

Globally Harmonized System (GHS)

What is the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)?

- GHS is a system, not a standard. It was developed with an international panel of scientific experts and industry stakeholders and managed by the United Nations to synchronize the definitions of chemical hazards.
- It is a defined system that classifies chemicals by their hazard. This includes ensuring proper labeling and appropriate Safety Data Sheets (SDSs).
- GHS addresses the issues of chemical management and use in a global economy with a diverse set of regulations between countries, regions and business sectors.

Globally Harmonized System (GHS)

As seen in the video, adopting GHS will result in three major areas of change:

- **Hazard classification:** The definition of a hazardous chemical has been changed to provide specific, uniform criteria for classification of health and physical hazards.

- **Labels:** Chemical manufacturers, importers and distributors will be required to provide a label that includes a harmonized signal word, pictogram and hazard statement for each hazard class and category. Precautionary statements must also be provided.

- **Safety Data Sheets:** These will now have a **specified** 16-section format.

During the transition period, manufacturers, employers, importers and distributors may comply with the final standard, the current standard or both.

The Written Program

Your hazard communication program:

- A copy of your hazard communication program must be in writing and located at each facility so that all important safety information is easily accessible to every employee.

- The written program is an important source of information needed to prevent accidents related to hazardous materials.

Management has developed a plan that is specific to your organization.

The Written Program

A written hazard communication program must include:

- The names of those responsible for administering each part of the program.
- An inventory of all the hazardous materials onsite, including SDSs.
- Employee training procedures, including the personal protective equipment (PPE) specified on the SDSs.
- Information about container labeling procedures.
- General instructions for safe handling of the chemical, proper disposal and emergency procedures.
- Training on unusual tasks, such as cleaning machinery, that may result in additional hazards.
- Rules that private contractors must follow when onsite.

Hazardous Materials Inventory

The hazardous materials inventory provides:

- Safety information about all hazardous substances in the workplace.
- Chemical identification:
  - The chemical's full name from container labels.
  - The chemical's commonly used name.
  - **The product identifier:** A unique name or number which can be cross-referenced to the correct SDS so that anyone can easily obtain the chemical information they need.
- Information about where each hazardous material is used.

Employee Training

Employee training overview:

- Training enables employees to perform their job according to the health, safety, first aid and emergency procedures necessary.
- Employees must be fully trained on the specific hazards in their work area. Employees that require training include:
  - Those who might be exposed under normal conditions or in an emergency situation.
  - Contractors and off-site employees.
  - Transportation employees and emergency responders.
- Every employee must receive specific training **before** working with any hazardous chemical.
  - Training is required at the time of the initial assignment.
  - Additional training is required when a new chemical hazard is introduced to the workplace.

Employee Training

Training must include:

- The expectations of the program.
- The right to know and understand hazards in the workplace, including GHS hazard classification, pictograms and signal words.
- All hazards associated with each chemical in the workplace:
  - Physical hazards
  - Health hazards
  - Simple asphyxiation
  - Combustible dust
  - Pyrophoric gas hazards
  - Hazards not otherwise classified

Employee Training

Training must include (continued):

Information sources:

- **Written hazard communication program:** This includes a list of chemicals used by the organization. Employees should know the contents and location.
- **Labels:** Employees should understand labeling on containers they will encounter.
- **Safety Data Sheets (SDSs):** These documents provide important information about hazardous materials in the workplace. Employees should know their contents, structure, order of information and their location.

Employee Training

Training must include (continued):

Procedures:

- How to detect the release or presence of a hazardous chemical.
- Chemical handling procedures that eliminate the risk of harmful exposure.
- The proper use of controls including engineering controls, signs, emergency procedures and personal protective equipment (PPE) while working with hazardous materials.
- Proper chemical labeling practices.

Your performance will be evaluated to ensure that you are meeting the requirements and that you consider safety a top priority.

Hazardous Materials and Your Body

How hazardous substances affect your body:

- Hazardous materials can create serious health risks. The risks are dependent on the substances used and the duration of exposure.
- Symptoms vary from short term effects such as headaches or skin irritation to long term effects like organ damage or cancer.
- The *route of entry* is how a substance gets into your body. This can happen in one or more of the following ways:
  - Ingestion: Through the digestive tract by swallowing.
  - Absorption: Through the eyes, skin, or mucous membranes.
  - Inhalation: Through the respiratory tract by breathing.
  - Injection: Piercing the skin, involving cuts or needles.

The strength of the substance and the quantity that enters the body determine the effect.

Hazardous Materials and Your Body

Eye hazards: Impair eye or visual capacity.

Signs: Conjunctivitis, corneal damage.

Chemicals: Organic solvents, acids, bases, peroxides.

Hepatoxins: Damage the liver.

Signs: Jaundice, liver enlargement.

Chemicals: Carbon tetrachloride, nitrosamines.

Blood & hematopoietic system agents: Affect hemoglobin function, deprive body tissue of oxygen.

Signs: Low blood oxygen, loss of consciousness.

Chemicals: Carbon monoxide, cyanides.

Neurotoxins: Damage the nervous system.

Signs: Narcosis, behavioral changes, decrease in motor functions.

Chemicals: Mercury, carbon disulfide, acrylamide, lead.

Hazardous Materials and Your Body

Cutaneous hazards: Affect the skin or dermal layer.

Signs: De-fatting of skin, rashes, irritation.

Chemicals: Acetone, solvents, chlorinated compounds.

Lung damaging agents: Irritate or damage pulmonary tissue.

Signs: Cough, shortness of breath, chest tightness.

Chemicals: Silica, asbestos.

Nephrotoxins: Damage kidneys.

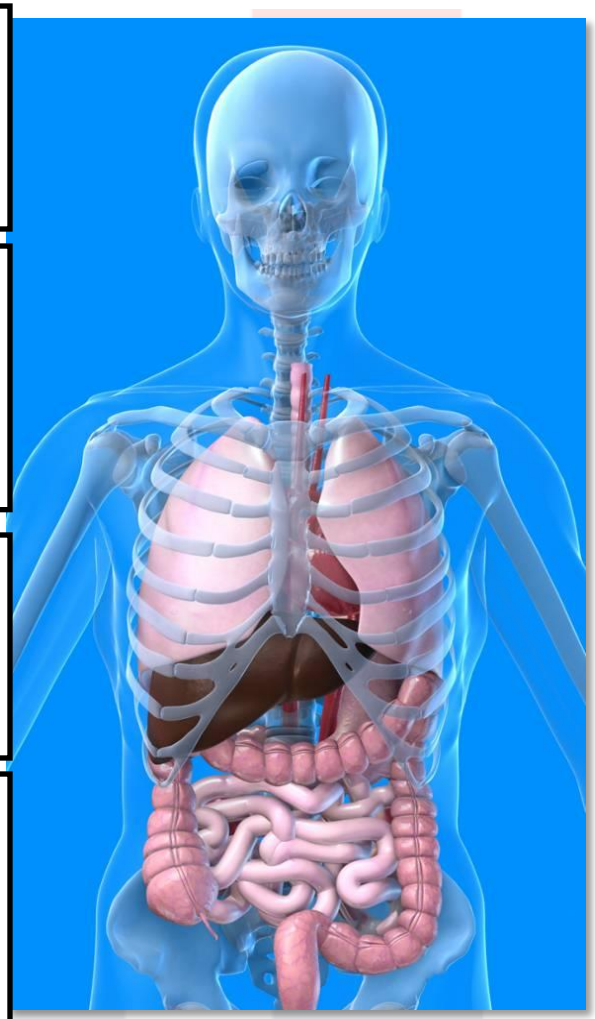
Signs: Swollen body tissue, excess protein in urine.

Chemicals: Heavy metals.

Reproductive toxins: Include mutagens and teratogens.

Signs: Birth defects, spontaneous abortions.

Chemicals: Organic lead, mercury.



Understanding Exposure Limits

Exposure limits vary by chemical:

- In addition to recognizing how a substance enters your body, it is important to know how toxic each specific material is.
  - Some materials have few harmful effects at high concentrations for long periods of time.
  - Others can be very dangerous, even fatal, at very low concentrations for very short periods of time.

- It is important to recognize the exposure limits of any chemicals you are working with.

Understanding Exposure Limits

Exposure limits are determined by:

- **Duration:** How long you are near the material.
- **Concentration:** How much of the material is present.

Exposure = **Duration** x **Concentration**

Understanding Exposure Limits

Permissible Exposure Limits:

- Most chemicals have established Permissible Exposure Limits (PELs) which are established by research data. These should be referenced in your Hazard Assessment.
- PELs for chemicals can vary by country and state standards. They identify how high of a concentration (how much exposure) is deemed safe to a particular substance.
- To ensure your safety around hazardous materials, your exposure to any chemical must remain below its PEL. This is accomplished by scientifically monitoring workplace exposure levels, establishing the proper controls and properly handling all materials.

Understanding Exposure Limits

Permissible Exposure Limits (continued):

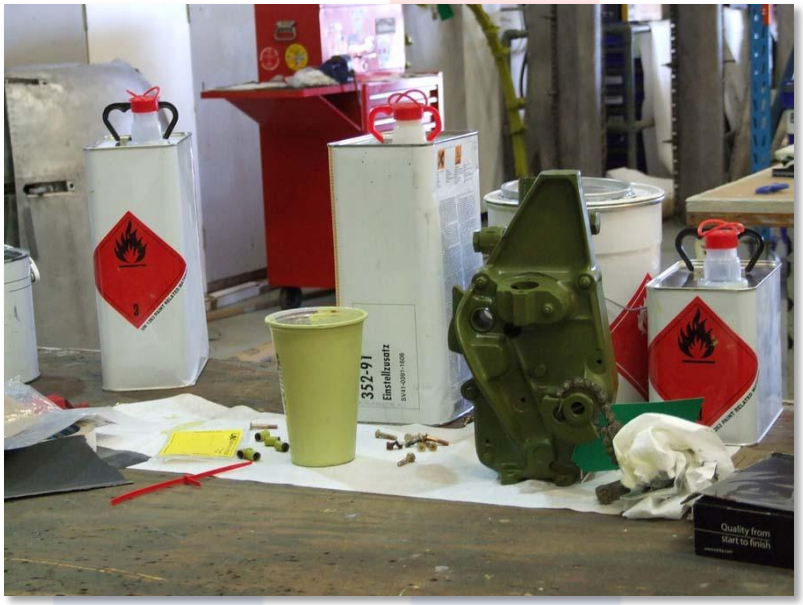
- Chemical exposure limits are written using **units of measurement** and **periods of time.**
- Various exposure measurements will be taken at specific, timed points while working with the chemical.
- The exposure measurements will be averaged over the work day of eight hours. The result is a time-weighted average (TWA).
- Based on the chemical hazard, PELs may apply to concentrations in the air or on the skin.

Failing to observe PEL guidelines can lead to sickness, injury or death.

Understanding Exposure Limits

Other units of measurement:

- Parts per million (ppm)
- Milligrams per cubic meter (mg/m^3)
- Parts per billion (ppb)
- Fibers per cubic centimeter (f/cc), e.g., asbestos fibers



Understanding Exposure Limits

Units of exposure time:

- **Eight-hour time-weighted average (TWA):** Exposures throughout the work day should not exceed this value.
- **15-minute short term exposure limit (STEL):** Exposures during 15 minutes must not exceed this value.
- **Ceiling limit (c):** Exposures must never exceed this value.

Hazard Classification

Hazard classification:

- Manufacturers and importers must evaluate and classify chemicals produced in their workplace.
- The hazard class and category of each chemical must be determined.
- The classification must take into consideration the full range of available scientific information concerning all potential hazards.

Hazard Classification

Determining hazard classification:

- Chemical manufacturers and importers must classify chemicals in accordance with the GHS classification section.

- In order to be uniform worldwide, the new classification system includes the following:
  - Specified criteria for each health and physical hazard.
  - Detailed instructions for how to evaluate a hazard.

- Manufacturers, importers and distributors will have to determine if mixtures are considered hazardous and, if they are, to classify them.

Employers do not need to classify chemicals unless they choose not to rely on the manufacturer classification.

Hazard Classification

The first step in classification is determining whether a material is a hazardous chemical:

A hazardous chemical is any chemical classified as a:

- Health hazard.
- Physical hazard.
- Simple asphyxiant, e.g., inert gases.
- Combustible dust, e.g., grain dust.
- Pyrophoric gas, e.g., silane.
- Hazard not otherwise classified (HNOC).

GHS outlines criteria for determining whether a chemical is hazardous and its degree of hazard. OSHA lists these criteria in Appendix A and B of the standard.

Hazard Classification

Health hazards:

- Acute toxicity (any route of exposure)
- Skin corrosion or irritation
- Serious eye damage or eye irritation
- Respiratory or skin sensitization
- Germ cell mutagenicity
- Carcinogenicity
- Reproductive toxicity
- Specific target organ toxicity
- Aspiration hazards

A chemical may have more than one hazard classification.

Hazard Classification

Physical hazards:

- Explosives
- Flammable gases, aerosols, liquids or solids
- Oxidizers (liquids, solids or gases)
- Self-reactive chemicals
- Pyrophoric liquids or solids
- Self-heating chemicals
- Includes organic peroxide
- Corrosive to metal
- Gases under pressure
- Chemicals that emit flammable gas while in contact with water

Appendix B to §1910.1200 includes the defined physical hazard criteria.

Hazard Classification

Hazards not addressed by GHS:

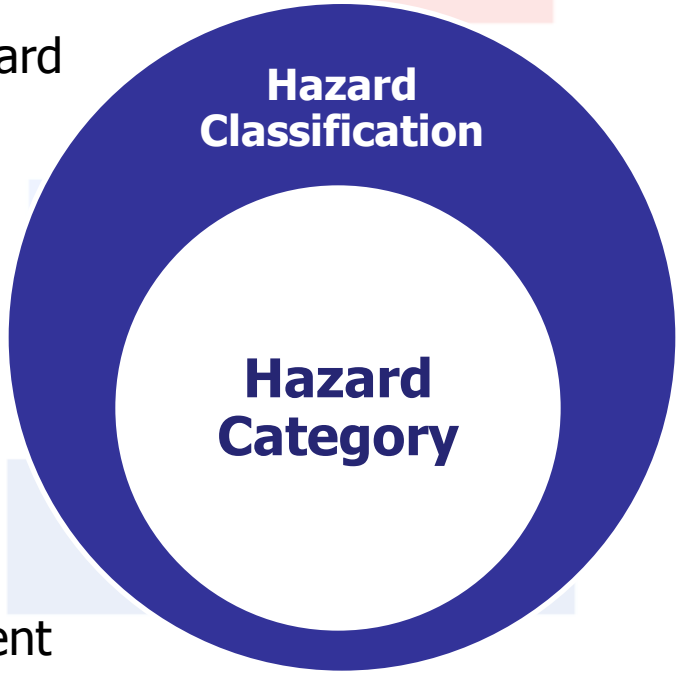
- GHS does not have defined criteria for certain hazards that organizations in the United States felt should be addressed.
- To handle these anomalies, OSHA devised a few specific label elements for the following hazards:
  - **Pyrophoric gas:** Gases that catch fire when exposed to oxygen.
  - **Simple asphxyiant:** Gases that displace oxygen.
  - **Combustible dust:** This may become explosive under certain conditions.
- In addition, a category called "hazards not otherwise classified" or HNOC was developed and must be stated on the SDS.

The label elements for these OSHA defined hazards can be found in Appendix C §1910.1200.

Hazard Classification

The second step in classification is assigning the hazard category:

- Each classification section has a hazard category that is based on scientific data of acute and long term exposure and physical properties.
- Hazard categories also have very specifically defined criteria and can be found in Appendix A or B depending on the hazard classification.
- Each classification can have a different number of hazard categories. For example:
  - Oxidizing gases have one hazard category.
  - Oral acute toxicity has four.



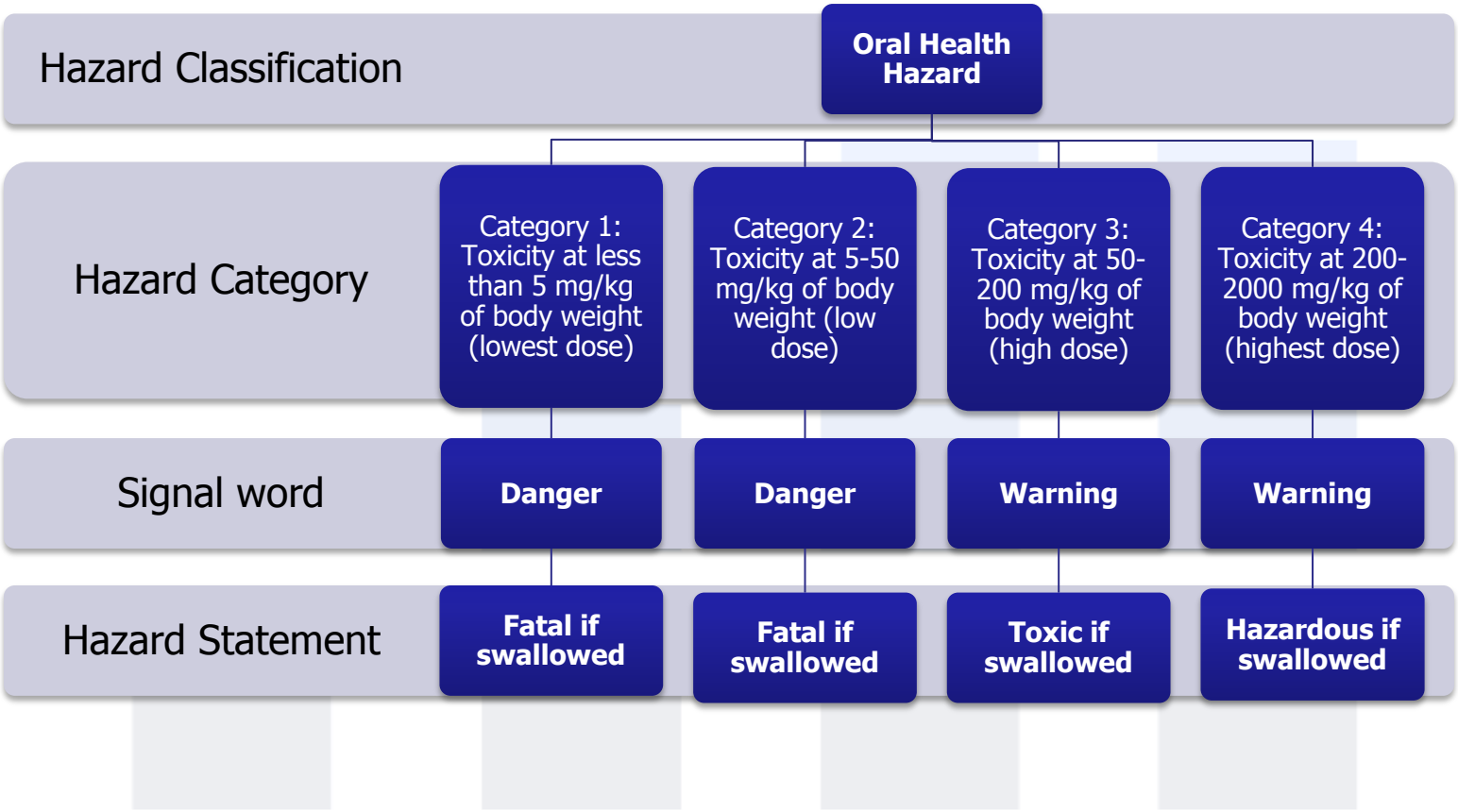
Hazard Classification

The third step in classification is selecting the appropriate hazard statements:

- Hazard statements describe the nature of the hazard of a chemical and in some cases the degree of the hazard.
- Hazard statements are required on labels and are addressed later in the training.

Hazard Classification

The steps of hazard classification:



Exposure Controls

Engineering controls:

- Engineering controls reduce the concentration of hazardous chemicals in the air and reduce exposure through employee contact.

- Engineering controls include:
  - Ventilation, such as a down draft table.
  - Local exhaust ventilation such as a vacuum or snorkel.
  - Glove boxes for the manipulation of highly hazardous chemicals.
  - Changes to the handling processes that reduce employee contact with the hazardous chemical.

Exposure Controls

Work practice controls:

- Employee behavior when working with hazardous chemicals can reduce the risk of exposure.
- Work practice controls include:
  - Not eating, drinking or applying cosmetics, including lip balm, while working with a hazardous chemical.
  - Obeying all posted signs and placards.
  - Washing hands after removing PPE, at the end of the work day and prior to eating or drinking.
  - Reporting any spills or leaking containers to your supervisor.

Exposure Controls

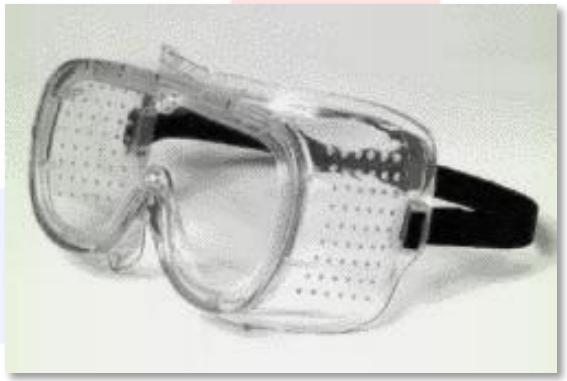
Personal protective equipment:

- You may need to wear personal protective equipment (PPE) when working with hazardous materials.
- A hazard assessment must be completed to determine the appropriate PPE to be worn when working with a chemical hazard.
- PPE must be:
  - Specifically approved for the work.
  - Written in the PPE Hazard Assessment.
  - Inspected and maintained daily.

Exposure Controls

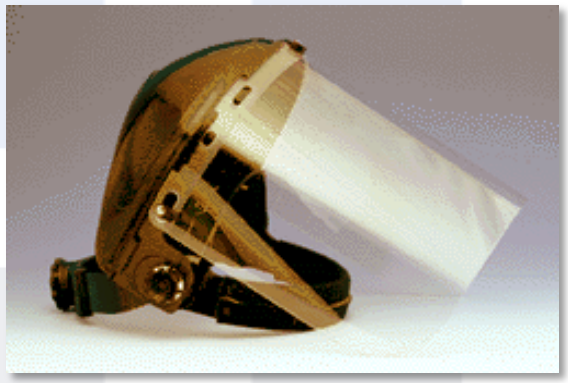
Personal protective equipment types:

Face and eye protection:



- Safety glasses, goggles or a face shield must be worn if there is the possibility that hazardous materials will contact your eyes or face.

- Goggles shield the eyes against liquid or chemical splashes, irritating mists, vapors, fumes and particulates.



- Face shields protect the entire face against exposure to hazardous materials. These should be used in conjunction with safety glasses or goggles.

Personal protective equipment types (continued):

Skin protection:

- Skin protection depends on the hazard. Protection may be required for the whole body or only for the hands.
- Gloves must be designed for the specific hazardous material.
  - Consider the conditions present, duration of use and potential hazards.
  - If the wrong material is selected the glove will not provide the proper protection.
  - Chemicals may pass through some glove materials or break down the materials, leaving the wearer unprotected.

Exposure Controls

Personal protective equipment types (continued):

Respiratory protection:

- If fumes, vapors or particulates are present in the air, some form of respiratory protection may be required.
- This can range from a simple dust mask to a full-face respirator.
- You must have a medical evaluation, respirator specific training and a fit test prior to working with a respirator.

Pictograms

Pictograms and hazards:

- GHS developed a series of nine pictograms for use in labeling.
- It is expected that **all** existing hazard communication programs will need to be changed in some way to comply with GHS in this area.
- The pictograms will convey any health, physical and environmental hazards that are assigned to a GHS category.

Pictograms

Pictograms and hazards (continued):

- **The health hazard symbol may mean:**
  - Carcinogens.
  - Mutagenicity.
  - Reproductive toxicity.
  - Respiratory sensitizers.
  - Target organ toxicity.
  - Aspiration toxicity.

An example of a chemical that causes a health hazard is benzene, a common industrial solvent and known carcinogen.

Pictograms

Pictograms and hazards (continued):

- **The flame symbol may mean:**
  - Flammables.
  - Pyrophorics.
  - Self-heating chemicals.
  - Chemicals that emit flammable gas.
  - Self-reactive chemicals.
  - Organic peroxides.

An example of this is xylene, a common component of paint remover and a solvent used in many workplaces. It is a flammable liquid and also creates a vapor that is flammable.

Pictograms

Pictograms and hazards (continued):

- **The exclamation mark may mean:**
  - Irritants, such as skin or eye irritants.
  - Skin sensitizers.
  - Acute toxicity.
  - Narcotic effects.
  - Respiratory tract irritants.
  - Chemicals hazardous to the ozone layer. (This is a non-mandatory category.)

Acetone, a solvent used in various applications including women's cosmetics, is an eye, nose and throat irritant.

Pictograms

Pictograms and hazards (continued):

- **The gas cylinder symbol means:**
  - Gases under pressure.

An example of a chemical stored this way is nitrogen gas, which is used as a shield gas in gas metal arc welding.

Pictograms

Pictograms and hazards (continued):

- **The corrosive symbol may mean:**
  - Skin corrosion or burns.
  - Eye damage.
  - Corrosion to metals.

An example of a corrosive chemical is sodium hypochlorite, a common household bleach; it is corrosive to stainless steel.

Pictograms

Pictograms and hazards (continued):

- **The flame over circle symbol means:**
  - Oxidizers.

Sodium nitrate, a component of some fertilizers and occasionally used as a food preservative, is an oxidizer.

Pictograms

Pictograms and hazards (continued):

- **The exploding bomb symbol may mean:**
  - Explosives.
  - Self–reactives.
  - Organic peroxides.

Ammonium nitrate, used as a fertilizer, is an example of a chemical with an explosive hazard.

Pictograms

Pictograms and hazards (continued):

- **The skull and crossbones symbol means:**
  - Acute toxicity (fatal or toxic).

An example of a chemical with acute toxicity is hydrogen sulfide, a natural occurring gas in the earth. It is toxic if inhaled at high concentrations.

Pictograms

Pictograms and hazards (continued):

- **The environment symbol means:**
  - Aquatic toxicity.

Polybrominated diphenyl ether (PBDE), a liquid flame retardant, is an example of aquatic toxicants. PBDE are shown to accumulate in fish fat and cause development issues in marine life.

Container Labeling

Labels:

By June 1, 2015 all labels of hazardous chemicals must contain the following information:

- **Product identifiers:** A unique name or number used for a hazardous chemical that can be cross-referenced between the label, SDS and written hazard communication program.
- **Supplier identification:** The name, address and telephone number of the responsible party.

Container Labeling

Labels (continued):

By June 1, 2015 all labels of hazardous chemicals must contain the following information:

- **Signal words:** Used to indicate the severity of the hazard, the signal words are "danger" or "warning." Danger is for more severe hazards.
- **Pictograms:** These are symbols that indicate the hazard of the material.

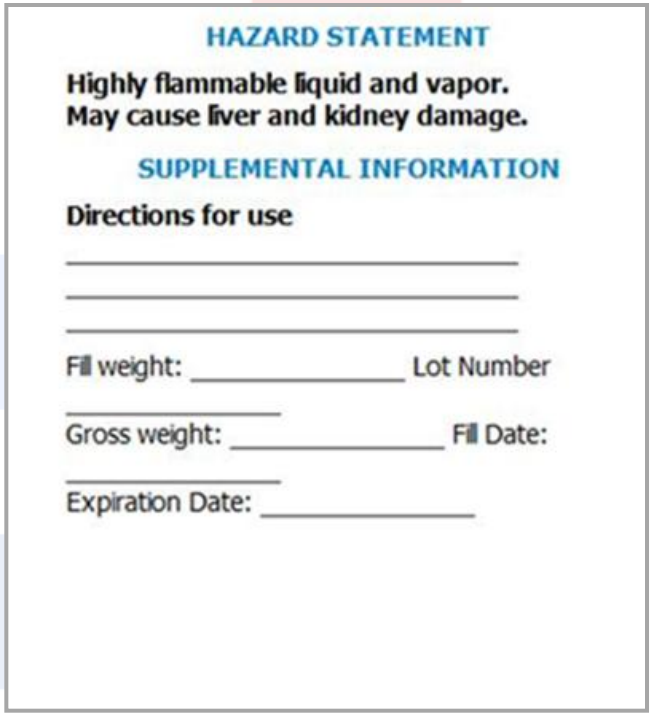
The specified signal words and pictograms are found in Appendix C.

Container Labeling

Labels (continued):

By June 1, 2015 all labels of hazardous chemicals must contain the following information:

- **Hazard statements:** Assigned statements that describe the hazard's nature and its degree of severity. For example:
  - "Fatal if swallowed."
  - "Harmful if inhaled."
  - "Toxic in contact with skin."



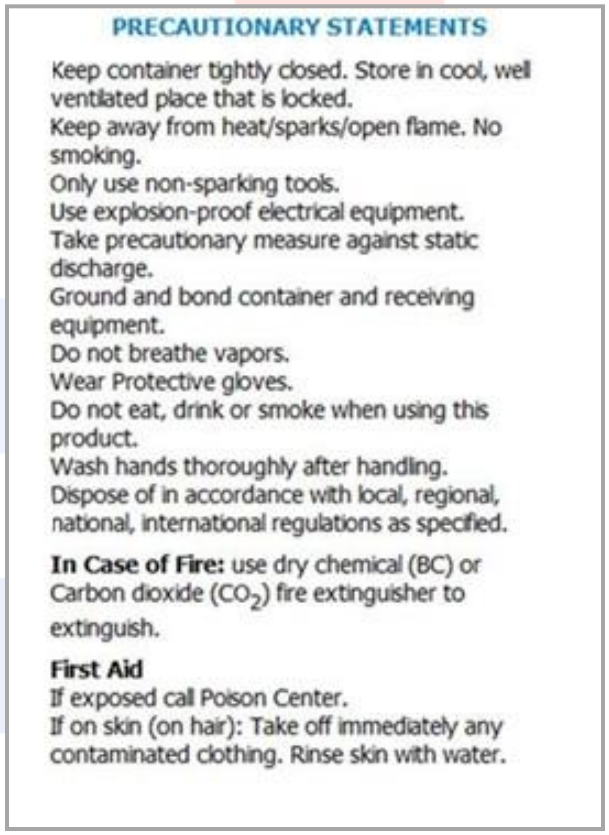
The specified hazard statements are found in Appendix C.

Container Labeling

Labels (continued):

By June 1, 2015 all labels of hazardous chemicals must contain the following information:

- **Precautionary statements:** Phrases describing recommended methods to avoid adverse effects. There are four types:
  - **Prevention**
  - **Response**
  - **Storage**
  - **Disposal**



PRECAUTIONARY STATEMENTS

Keep container tightly closed. Store in cool, well ventilated place that is locked.
Keep away from heat/sparks/open flame. No smoking.
Only use non-sparking tools.
Use explosion-proof electrical equipment.
Take precautionary measure against static discharge.
Ground and bond container and receiving equipment.
Do not breathe vapors.
Wear Protective gloves.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
Dispose of in accordance with local, regional, national, international regulations as specified.

In Case of Fire: use dry chemical (BC) or Carbon dioxide (CO_2) fire extinguisher to extinguish.

First Aid
If exposed call Poison Center.
If on skin (on hair): Take off immediately any contaminated clothing. Rinse skin with water.

The specified precautionary statements are found in Appendix C.

Container Labeling

Labels (continued):

The following will still be in effect:

- Labels must not be removed, defaced or altered in any way.
- All labels must be legible, in English and prominently displayed.
  - Information in other languages may be added, as long as English is displayed as well.
- The information must be provided in a consistent manner.
- Chemicals not classified as hazardous do not have to be noted on the container.
- For solid materials, the label may be given along with the SDS during the initial shipment.

Container Labeling

Labeling secondary containers:

- The containers that hazardous materials are transferred into from their original containers must also be labeled with the contents and hazards.
- Alternative labels are acceptable as long as they include the product identifier and words, pictures or symbols that indicate general information about the product and the hazards involved.
- Labels for the National Fire Protection Association (NFPA) and Hazardous Materials Identification System (HMIS) are permitted, especially during the transition period.
- Supplementary hazard information may be included on labels as long as it provides further detail and does not conflict with the existing GHS-compliant label.

Other Labeling Requirements

Labeling pipes:

- Pipes must be labeled to identify the material being carried and the direction of the flow. This is a requirement in some areas and is always advised as a "best practice" to avoid incidents.
- Labels that indicate content and flow are to be placed at all junctions and fittings and at least every 25 feet.

Safety Data Sheets

A Safety Data Sheet (SDS) lists the characteristics of a particular substance:

- Understanding the hazards of the materials you are working with can help you protect yourself against them.
- A SDS must be on file and readily available for each substance listed in the hazardous materials inventory section of the hazard communication program.

Use SDS Track™ to assist with organizing and updating your SDSs.

Safety Data Sheets

SDSs must include these 16 sections:

1. Identification
2. Hazard(s) identification
3. Composition and information on ingredients
4. First-aid measures
5. Fire-fighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure controls and personal protection

Safety Data Sheets

SDSs must include these 16 sections (continued):

9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information
16. Other information including the date of preparation or last revision

Safety Data Sheets

SDS sections include:

- **Section 1—Identification:**
  - The product identifier used on the label
  - The recommended use and any restriction of use
  - The contact information of the manufacturer, importer or responsible party
  - An emergency phone number
- **Section 2—Hazard identification:**
  - The classification of the chemical
  - The signal word, hazard statements and symbols, including pictograms
  - Special hazards, such as not using water in a fire situation

SDS sections include (continued):

- **Section 3—Composition and information on ingredients:**
  - The chemical name, common name and synonyms
  - The Chemical Abstract System (CAS) number or the European Commission number (EC)
  - Hazardous ingredients with percentages of each
  - For mixtures (as opposed to substances), the chemical name and exact percentage or concentration of all ingredients classified as health hazards

Trade secret protection is available to manufacturers for specific chemicals and for the disclosure of the percentage of the chemicals composing the mixtures on the SDS.

SDS sections include (continued):

- **Section 4—First-aid measures:**
  - The correct procedure, which is specific to the method of exposure
  - Acute and delayed symptoms of overexposure
  - The type of medical attention or treatment needed

- **Section 5—Fire-fighting measures:**
  - Suitable extinguishing media
  - Specific hazards arising from the chemical

Safety Data Sheets

SDS sections include (continued):

- **Section 6—Accidental release measures:**
  - Personal precautions and protective equipment
  - Emergency procedures
  - Containment methods
  - Materials for cleanup
- **Section 7—Handling and storage:**
  - Safe handling precautions
- **Section 8—Exposure controls and personal protection:**
  - Permissible Exposure Limits (PEL) and other exposure limits
  - Appropriate controls, including engineering controls and PPE

SDS sections include (continued):

- **Section 9—Physical and chemical properties:**
  - These include the following properties: appearance, odor, melting point, pH, vapor pressure, density and solubility.
- **Section 10—Stability and reactivity:**
  - Pyrophoric substances: These spontaneously ignite in air.
  - Oxidizers: These agents oxidize another substance, i.e., force it to give off oxygen, which can make it combustible or flammable.
  - Explosives
  - Polymerization: The substance will react and bond with itself, possibly generating heat.
  - Reactivity: The substance readily reacts and bonds with other chemicals.

Safety Data Sheets

SDS sections include (continued):

- **Section 10—Stability and reactivity (continued):**
  - Conditions to avoid, such as static discharge, shock or vibration
  - Hazardous decomposition products
- **Section 11—Toxicological information:**
  - Description of health effects
  - Routes of exposure
  - Symptoms related to exposure
  - Delayed and immediate effects
  - Toxicity data
  - The chemical's status in the National Toxicology Program
  - Suspected, presumed or known carcinogens

Safety Data Sheets

SDS sections include (continued):

- **Section 12—Ecological information:**
  - Degradability
  - Bioaccumulative potential
  - Mobility in soil
  - Ecotoxicity, aquatic and terrestrial
  - Other adverse effects
- **Section 13—Disposal considerations:**
  - Waste residues
  - Methods of disposing safely

Sections 12-15 are not mandatory for products only sold in the US.

Safety Data Sheets

SDS sections include (continued):

- **Section 14—Transport information:**
  - Proper shipping name
  - Transport hazards
  - Environmental hazards, such as marine pollutants
  - Special precautions with transportation
- **Section 15—Regulatory information:**
  - Country and state specific safety health and environmental regulations
- **Section 16—Other information:**
  - Date of preparation or last revision of SDS and related documents

Summary

Important dates for compliance:

Requirement	Completion Date	Responsible Party
Employees must be trained on new label elements and SDSs.	December 1, 2013	Employers
All provisions of the hazard communication final rule must be complied with, except as stated below: Containers must have GHS compliant label before shipping.	June 1, 2015 December 1, 2015	Manufacturers Importers Distributors Employers
Workplace labeling and hazard communication program updated. Additional training for employees on newly identified physical or health hazards completed.	June 1, 2016	Employers

Summary

- Comprehensive hazard communication training is essential to a safe and healthful work environment.
- To ensure your safety, as well as the safety of your co-workers, you must fully understand the types of hazardous materials used at your workplace. If you have any questions, ask your supervisor.
- You must also know what to do in case something unexpected happens during chemical use.
- GHS requires that chemical hazards are communicated in an organized way on labels and Safety Data Sheets (SDSs).
- Labels must have a product identifier that cross references with the SDS, a pictogram and a hazard statement to indicate the degree of severity.
- A good hazard communication program will keep you prepared and safe.

Staff must be trained on the GHS hazard classifications, labels and SDSs by December 1, 2013.

Hazard Communication

This form documents that the training specified above was presented to the listed participants. By signing below, each participant acknowledges receiving this training.

Organization:_____

Trainer:_____ Trainer's Signature:_____

Class Participants:

Name:_____ Signature:_____ Date:_____

Name:_____ Signature:_____ Date:_____

Name:_____ Signature:_____ Date:_____

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Name:_____ Signature:_____ Date:_____

Remember to load your completed trainings into the Risk Management Center.