

## Chemical Safety Standards



Employees have a “right to know” what chemicals they may be exposed to in the workplace.

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## OBJECTIVES

By the end of this module you will be able to:

- Explain what information is contained in the OSHA Hazard Communication Standard
- Define the meaning of hazardous chemical
- Describe the revised Safety Data Sheets
- Identify the new contents of a chemical label
- Recognize pictograms for chemical hazards

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## DEFINITIONS

- **Hazard Communication Standard** – protects the safety and health of employees at the workplace who come in contact with hazardous chemicals
- **Hazardous Chemical** – a substance that can release harmful vapors into the air, cause irritation/burn to the skin or eyes, sickness if swallowed, catch fire or explode. May also be a mixture of substances.
- **Hazard Classification** – new definitions of hazards provide specific criteria for classification of health and physical hazards and classification of mixtures – will bring consistency across chemical manufacturers

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## OSHA Communication Standard

- The Occupational Safety and Health Administration (OSHA) is an agency of the United States Department of Labor
- Enforcement of regulations for safety and health in the workplace come under OSHA
- OSHA's Hazard Communication Standard changed in 2012 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

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## Hazard Communication Standard

### INFORMATION

- There are big changes to what was previously found on the Material Safety Data Sheets (MSDS)
- MSDS are now called Safety Data Sheets (SDS) and will have a single format throughout the country
- Employees need to know how to read an SDS and where they are located in the workplace

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## Hazard Communication Standard

### LABELS

- Each chemical that is in the workplace must have a label on it so employees know what they have contact with while working
- The information on the labels has also been increased to include pictograms, signal words, hazard statement and precautions statement

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## MSDS/SDS

- Companies that manufacture or import hazardous chemicals used in your workplace must provide information to your employer about the chemical



- SDS are sent to the employer when a hazardous chemical is purchased

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## Safety Data Sheet

- There is a new single format for all SDS throughout the country, and world
- The number of sections on the SDS has increased from 9 to 16
- During the transition period employees may see both MSDS and SDS in the workplace



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## SDS Content

- Section 1, Identification** – includes product name, information about the manufacturer, recommended use, and restrictions on use

- Identification
  - Product identifier used on the label;
  - Other means of identification;
  - Recommended use of the chemical and restrictions on use;
  - Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party;
  - Emergency phone number.

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## SDS Content Cont.

- Section 2, Hazard(s) Identification** – includes all hazards about the chemical and required label contents

- Hazard(s) Identification
  - Classification of the chemical;
  - Signal word, hazard statement(s), symbol(s) and precautionary statement(s) (Hazard symbols may be provided as graphical reproductions in black and white or the name of the symbol, e.g., flame, skull and crossbones);
  - Describe any hazards not otherwise classified that have been identified during the classification process;
  - Where an ingredient with unknown acute toxicity is used in a mixture at a concentration  $\geq 1\%$  and the mixture is not classified based on testing of the mixture as a whole, a statement that X% of the mixture consists of ingredient(s) of un Heading Subheading

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## SDS Content Cont.

- Section 3, Information on Ingredients** – the chemical ingredients and any trade secret claims are included



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## SDS Content Cont.

- Section 4, First-aid Measures** – important symptoms and required treatment is included



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## SDS Content Cont.

**Section 5, Fire-fighting Measures** – techniques for extinguishing fires, equipment and chemical fire hazards



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## SDS Content Cont.

**Section 6, Accidental Release Measures** – lists emergency techniques, personal protective equipment (PPE), methods to contain and clean up



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## SDS Content Cont.



**Section 7, Handling and Storage** – lists safety measures for handling and storing chemicals

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## SDS Content Cont.



**Section 8, Exposure Controls/Personal Protection** – exposure and threshold limits (time), engineering controls and PPE listed

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## SDS Content Cont.



**Section 9, Physical and Chemical Properties** – the characteristics of the chemical

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## SDS Content Cont.



**Section 10, Stability and Reactivity** – includes possible hazardous reactions

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## SDS Content Cont.



**Section 11, Toxicological Information** – lists routes of exposure, acute and chronic symptoms and effects, measures of toxicity

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## SDS Content Cont.

- **Sections 12 through 15 are not under OSHA jurisdiction** – they include information on ecology, disposal and transport regulations – this is only information for employers
- **Section 16, Other information** – included is date of preparation or last revision of the SDS

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## Location of SDS in Workplace

A central location for copies of SDS is required for ease of employee access in your work area



SDS may be in a book or electronic form on a computer network

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## Specific Information You Should Know

### Working with Chemicals

- Know name and how to handle hazardous chemicals/products
- Know how the chemical can enter the body – eye, skin, absorption, breathing, swallowing
- Know what appropriate personal protective equipment to wear
- Know to work in appropriate space and ventilation
- Know symptoms of exposure
- Know what to do in response to signs and symptoms
- Know where to find the information

Who is responsible? **You!**



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## LABELS FOR CHEMICALS

Each label will now include:

- Product identifier – name of the product and hazardous chemical in the container, recommended use and restrictions
- Signal word
- Hazard statement
- Pictogram
- Precautionary statement
- Name, address and emergency telephone number of the chemical manufacturer or importer

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## Labels in the Workplace

Your employer must ensure labels are:

- Legible (clear and easy to read)
- Prominently displayed on the container (where they can easily be seen)
- Written in English (may have another language in addition to English)

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## Labels

### Signal Words

- Single word used to indicate the level of hazard severity
  - Sample signal words
    - Warning
    - Danger
    - Caution

	
Danger	Warning
Toxic if Swallowed	Harmful if Swallowed

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## Labels Cont.

### Hazard Statement

- Indicates the class and category of the chemical (liquid, gas, solid, aerosol)
- Describes the nature of the hazard
  - Health Hazard
  - Physical Hazard
- Degree of hazard
- Health Hazard Examples
  - Fatal if swallowed
  - Toxic if swallowed
  - Harmful if swallowed
- Physical Hazards
  - flammable, combustible, explosive, pyrophoric, oxidizing, self-reactive, self-heating, gas under pressure

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## Labels Cont.

### Pictograms and Hazards

- OSHA's Hazard Communication Standard (HCS) requires 8 different pictograms to be used
- Each pictogram has corresponding hazards
- You need to have the pictogram on the label
- The hazards help to define the pictogram

Example:  
Environment



• Aquatic Toxicity

Note: This pictogram is not mandatory per OSHA standard, presented here as an example.

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## Pictograms and Hazards



- Health Hazard
- Carcinogen
- Mutagenicity
- Reproductive Toxicity
- Respiratory Sensitizer
- Target Organ Toxicity
- Aspiration Toxicity



- Flame
- Flammables
- Pyrophorics (liquid, solid)
- Self-Heating
- Emits Flammable Gas
- Self-Reactives
- Organic Peroxides

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## Pictograms and Hazards



- Exclamation Mark
- Irritant (skin and eye)
- Skin Sensitizer
- Acute Toxicity
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone Layer (Non-Mandatory)



- Gas Cylinder
- Gases Under Pressure

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## Pictograms and Hazards



- Corrosion
- Skin Corrosion/Burns
- Eye Damage
- Corrosive to Metals



- Exploding Bomb
- Explosives
- Self-Reactives
- Organic Peroxides

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## Pictograms and Hazards



- **Flame Over Circle**
- Oxidizers  
(liquid, solid, gas)



- **Skull and Crossbones**
- Acute Toxicity (fatal or toxic)

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## Labels Cont.



- Precautions Statements
  - How to safely handle and store the product
  - How to safely use the product
  - What personal protective equipment may be needed, gloves, mask, gown, goggles
  - How much ventilation may be required

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## Sample Label



ToxiFlam (Contains: XYZ)



Danger! Toxic If Swallowed, Flammable Liquid and Vapor

Do not eat, drink or use tobacco when using this product. Wash hands thoroughly after handling. Keep container tightly closed. Keep away from heat/sparks/open flame. - No smoking. Wear protective gloves and eye/face protection. Ground container and receiving equipment. Use explosion-proof electrical equipment. Take precautionary measures against static discharge.

Use only non-sparking tools. Store in cool/well-ventilated place.

IF SWALLOWED: Immediately call a POISON CONTROL CENTER or doctor/physician. Rinse mouth.

In case of fire, use water fog, dry chemical, CO<sub>2</sub>, or "alcohol" foam.

See Material Safety Data Sheet for further details regarding safe use of this product.

MyCompany, MyStreet, MyTown NJ 00000, Tel: 444 999 9999

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## Updated Hazard Classifications

### Flammable and Combustible Liquids

- Flammable liquid: any liquid having a flash point below 100°F (37.8°C)
- Combustible liquid: any liquid having a flash point at or above 100°F (37.8°C)



Flashpoint – lowest temperature where mixed vapors of the chemical and air can be ignited (set on fire)

Many common products like solvents, thinners, cleaners, adhesives, oils, oil based paints, waxes, and polishes may be flammable or combustible.

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## Formaldehyde

### Classified as a carcinogen

Myeloid Leukemia, cancer of nasal passages and upper mouth

Substance can be a vapor and/or liquid (Formalin)

- Handling precautions (inhalation or absorption)
  - Personal Protective Equipment (PPE):  
Safety glasses (close fitting) or goggles, gloves, respiratory equipment, gown, rubber apron, adequate ventilation in work space



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## Liquefied Petroleum Gases

Propane, propylene, butane (normal or iso-butane), butylenes (odorized for detection)

- Storage (Containers/tanks)
  - Should not be bigger than 1,200 to 2,000 gallons
  - Large - 15 ft from any equipment for ventilation
  - Large & Small – must have shut off valve, safety relief valve, labeled with container type/valve pressure
- Handling (Use only as directed)
  - Know the purpose of equipment that use gases
  - Check for valve closure before and after using
  - Wear appropriate PPE

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## General Chemical Spill Guidelines

- Isolate the area
- Obtain the SDS and read how to clean up the spill
- Obtain appropriate spill kit
- Wear appropriate Personal Protective Equipment
- Use proper technique to clean the spill area
- Properly dispose of materials
- WASH YOUR HANDS!!
- Call for help if you are unsure of the correct and safe way to handle the spill



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## Employers

Employers must have an education plan in place and provide employees with information and training on hazardous chemicals in their work area during orientation and whenever a new hazardous chemical is introduced into their work area.



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## Plan for Education of Employees

- The education plan must include:
  - What chemical exposure is in their work area
  - Categories of hazards for specific chemicals
  - How to read Safety Data Sheets and their location
  - How to read labels on chemical containers
  - Personal Protective Equipment (PPE) and location
  - How to work using the chemicals
  - Location of eye wash stations and other equipment
  - How to handle emergency situations

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Employees who have had chemical hazard education are more likely to protect themselves and their co-workers against exposure.

A safe workplace is the goal of OSHA and your employer.



For more information:  
[www.osha.gov](http://www.osha.gov)  
[www.cpls.org](http://www.cpls.org)

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Your employer thanks you for helping to making your work environment a safe place for patients and employees.

You have completed this Learning Module.

**You have completed this learning module. To exit the module, click on the "X" at the top of this screen and proceed to take the test per the directions on your Quick Reference Guide.**

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