

The Hazard Communication Standard's goal is to ensure all chemicals — manufactured or imported — are categorized as hazardous, and that information about the classified hazards is communicated to employers and employees through a hazard communication program.

All hazard information and protective measures must be communicated to the company and to all personnel who may have been exposed to the hazard.

A hazardous chemical is any chemical classified as a physical hazard, health hazard, simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified.

A chemical with any of the following characteristics can be defined as a hazardous chemical.

- Dynamite
- A chemical that's combustible
- An oxidant
- A chemical that reacts to itself
- Pyrophoric
- Self-contained heating
- Organic Peroxide
- Destructive to metals
- Pressurized gas
- A chemical that emits a flammable gas when it contacts water.

A substance with one of the following harmful effects is classified as a health hazard:

- Toxicity in the short term
- Irritation or skin corrosion
- Severe eye irritation or damage
- Sensitivity of the lungs or skin
- Mutagenicity of germ cells
- A substance with carcinogenic potential
- A chemical that's toxic to the reproductive system or other organs or if it poses an aspiration risk.

A simple asphyxiant is a material or mixture that can cause oxygen deprivation in people exposed to it, resulting in unconsciousness or death.

HARMFUL CHEMICALS ON THE PROJECT SITE

Employers must maintain a list of harmful chemicals at the workplace. Each chemical in this list needs to include the date the chemical was received at the workplace and the Manufacturer's product name. In multi-employer workplaces, where other employer's employees could be

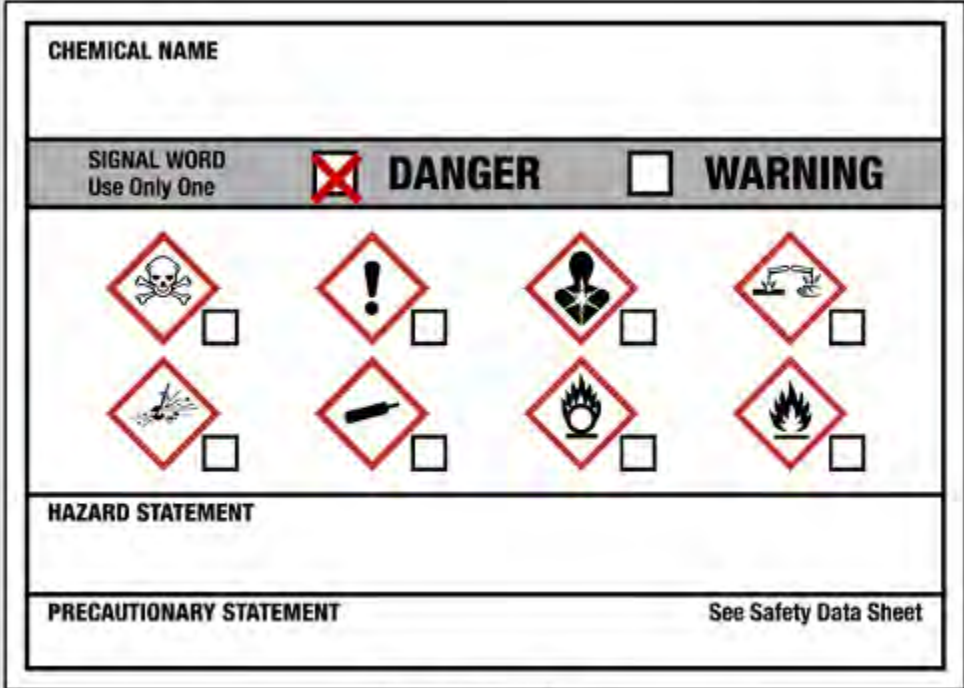
exposed, processes must be in place to notify the other employer or employers of the hazards as well.

LABELING

Who is responsible for labeling containers? Would it be the manufacturer, the importer, or the wholesaler? If you're thinking it's the employer's responsibility, you're right! When the containers arrive, employers must make sure every container of hazardous chemicals is properly labeled. There are a couple of exceptions. And that's if the containers are non-portable, or if portable containers into which hazardous chemicals are transferred from labeled containers for the employee executing the transfer's immediate usage.

Employers must comply with the following requirements when employees handle chemicals in sealed containers that are not opened under regular conditions of use: Make certain all inbound containers are labeled, keep copies of any safety data sheets that arrive with sealed container shipments, and if an employee wants to review a safety data sheet, provide them with the datasheet as quickly as feasible.

The product Identifier is a unique way for a user to recognize a hazardous substance.



CHEMICAL NAME

SIGNAL WORD
Use Only One **DANGER** **WARNING**

HAZARD STATEMENT

PRECAUTIONARY STATEMENT See Safety Data Sheet

Product Identifier

It could be a number or a name. The product identifier on the label and the safety data sheet must be the same. The word "danger" is used to describe more serious dangers. For less serious dangers, "warning" is used.

A "hazard statement" specifies the nature of the chemical's dangers, including the degree of hazard where applicable. For products that pose more than one hazard, the label must provide an appropriate hazard statement for each hazard categorization.

The words: fatal if swallowed, toxic if it comes into contact with the skin, Toxic if inhaled, prolonged or repetitive exposure to this substance may cause organ harm, causes severe skin rashes, and damage to the eyes. Explosive, with a high risk of projection, Highly flammable substance, Heating can result in a fire, or oxidizers can start or aggravate a fire, are examples of hazardous statements.

A "precautionary statement" is a term that specifies the precautions that should be taken to reduce or eliminate the negative effects of exposure to a hazardous substance or inappropriate storage or handling.

There are four types of precautionary statements: Prevention, which would be how to minimize exposure. Response, such as what to do in the case of accidental spillage including first aid. Finally there's storage and disposal. Bold print must be utilized for the statement's main points and plain text for any extra information needed.

A "pictogram" is a symbol designed to convey detailed information about a chemical's risks. Pictograms are squares with a point in the middle and a black hazard symbol on a white background surrounded by a red frame.

On a hazardous chemical label, there are nine different pictograms: An exploding bomb, a gas cylinder, an exclamation point, a flame, corrosion, health hazard, oxidizing, skull and crossbones, and environment

For each hazardous chemical produced or imported, chemical manufacturers and importers must create or receive a Safety Data Sheet (SDS). And, for any hazardous chemical used in the workplace, employers must have an SDS on file.

SAFETY DATA SHEETS

Safety data sheets are required when the first dangerous chemical arrives onsite; and
With the first shipment following the upgrade of an SDS; and
At the request of an employer.

Employers must guarantee that SDSs for each hazardous chemical on site are easily available to employees when they are in their job zones during each work shift.

Electronic access is allowed as long as there are no restrictions to immediate employee access.

HAZARD COMMUNICATION PROGRAM

The written Hazard Communication program must address the following: Labels, how will the company address labeling requirements? Where will the SDS be located? What's the process of taking delivery of hazardous materials, labeling, and storing them? Who is tasked with training employees, and how often will training occur?

In the HazCom Program, the employer must agree to maintain a list of all hazardous chemicals known to be present in the workplace. The employer also agrees to use the product identifier to prepare the list to make it easy to track the status of SDSs and labels of a particular hazardous chemical.

TRAINING

Employees must be trained by their employers, at the time of initial assignment, to a work environment containing hazardous substances; and anytime a new hazard enters the work environment. In training, the following information must be provided to all employees:

- The Hazard Communication Standard's clauses
- Harmful chemicals in their work environment
- The written Hazard Communication Program's location and accessibility
- Necessary hazardous chemical list location
- The Safety Data Sheet location

Also included in training must be the methods used to detect the presence or release of a hazardous chemical. For example:

- There might be employer-conducted surveillance
- Monitoring devices for continuous monitoring
- Safe working procedures
- Personal Protective Equipment
- Shipping container labels
- Workplace labeling, and how to gather and apply relevant danger information.

Hazardous chemicals pop up in most workplaces. They're used to manufacture many of the products we use on a day-to-day basis. This means there is a real potential for accidents, incidents, and injuries when people work with, or in the vicinity of, hazardous chemicals. But, by knowing and understanding the basic nature of those chemicals and how to safely work with or around them, employees can greatly decrease any risk that might be present.

HEARING PROTECTION

Hearing protection must be worn when an employee's noise exposure cannot be reduced to safe levels. There are several options for hearing protection available that include ear plugs, ear-muffs, and hearing bands, also known as canal caps. We'll go into hearing protection in the module on Personal Protective Equipment.

RADIOACTIVE MATERIALS

Any activity involving radioactive materials or X-rays, whether or not under license from the Nuclear Regulatory Commission, must be performed by competent persons specially trained in the proper and safe operation of such equipment. In the case of materials used under the Commission license, only persons licensed or competent persons under the direction and supervision of the licensee shall perform such work.

Non-Ionizing radiation is Extremely Low Frequency (ELF) radiation and is produced by power lines, electrical wiring, and electrical equipment. Common sources of intense exposure include ELF induction furnaces and high-voltage power lines.

The best control to reduce exposure risk to non-ionizing radiation is elimination. But, if that's not possible, other risk controls to use will be identified in your project's exposure control plan. Creating distance between workers and the radiation source can be effective; shielding is also if the radiation source is not from a specific location.

DUSTS, VAPORS, FUMES, and MISTS

Airborne contaminants can occur in the gaseous form or as aerosols, which include airborne dust, sprays, mists, smokes, and fumes. Airborne dust is particularly concerning because it's associated with occupational lung diseases like pneumoconiosis and systemic intoxications such as lead poisoning, especially at higher exposure levels. There's an increasing occurrence of other dust-related diseases, such as cancer, asthma, allergic alveolitis, and irritation, as well as a range of non-respiratory illnesses, which may occur at much lower exposure levels.

Airborne chemical hazards are concentrations of mists, vapors, gases, fumes, or solids. Some are toxic through inhalation; some irritate the skin on contact; some can be toxic by absorption—through the skin or ingestion, and some are corrosive to living tissue. Chemical vapor in the workplace is also a health hazard to the workers. Workers inhale the vapor, allowing the chemical to enter the bloodstream. Vapor may also cause harm to the skin and other unprotected areas of the body. Examples of vapors found in construction would be gasoline used for fuel—organic Solvents used as paint thinners, and glue solvents.

Soldering

Soldering involves flux; a Flux is a sticky side-product from the distillation of turpentine. Also known as colophony, it consists mainly of abietic acid with smaller quantities of stilbene derivatives, amine hydrochloride activators, and other hydrocarbons. When heated, the side products include hydrochloric acid, benzene, toluene, styrene, phenol, chlorophenol, isopropyl alcohol, and aliphatic aldehydes. 20% of employees who work with or near soldering develop asthma, and studies show it's the leading cause of illness and employee turnover in those industries. Metals also become airborne during soldering. Exposure to lead and other heavy metals can result in sterility, abortion, brain damage, fatigue, irritation, and anemia.

Exposure

Exposure of employees to inhalation, ingestion, skin absorption, or contact with any material or substance at a concentration above those specified in the "Threshold Limit Values of Airborne Contaminants for 1970" of the American Conference of Governmental Industrial Hygienists, must be avoided. To achieve compliance with what you've learned in this module, administrative or engineering controls must be implemented whenever feasible.

Controls

When controls can't achieve full compliance, protective equipment or other protective measures must be used to keep employee exposure to air contaminants within the limits. Any equipment and technical measures used for this purpose must be approved for each particular use by a competent industrial hygienist or other technically qualified people. Whenever respirators are used, they must comply with 1926.103, Respiratory protection. We'll dive into Respiratory Protection in another module within this OSHA 30 Course.

Ventilation

Engineering controls protect workers by removing potentially hazardous conditions or erecting barriers between workers and hazards. One example is local exhaust ventilation to capture and remove airborne emissions, as are machine guards to protect the worker. All employees working in and around open-surface tank operations must be trained in open-surface tank hazards, first aid procedures, and task-specific personal protective equipment. When hazardous substances such as dust clouds, fumes, mists, vapors, or gases exist or are produced during construction work, their concentrations must not exceed the limits specified in 1926.55a. Tables 1 and 2 from this section have been included in at the end of this section.

If it is necessary to enter a tank containing a hazardous atmosphere in an emergency, such as rescue work, suitable respirators, such as a self-contained breathing apparatus hose masks with a blower, should be worn. Employees must use respirators that reduce their exposure to a level

below the limits in 1926.55(a) or be provided adequate oxygen if there is a risk of oxygen deficiency.

Respirators must be provided in marked; quickly accessible storage compartments built for this purpose when the possibility of accidental release of hazardous concentrations of air contaminants exists. Respirators must be approved by NIOSH and selected by a competent industrial hygienist or other technically qualified source and used by 29 CFR 1926.103, which we'll cover in the Respiratory Protection module of this course.

If a contaminant in the tank can cause dermatitis or be absorbed through the skin, the employee entering the tank shall also wear protective clothing. At least one trained standby employee with a suitable respirator shall be present in the nearest uncontaminated area. The standby employee must be able to communicate with the employee in the tank and haul him out of the tank with a lifeline if necessary.