

YOUNGSTOWN STATE UNIVERSITY

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION  
EMPLOYEE HAZARD COMMUNICATION STANDARD

## INTRODUCTION

The Hazard Communication Standard, (HCS), is found in 29 CFR §1910.1200 as published in the Federal Register on November 25, 1983 (48 CFR §53280). The HCS required the chemical manufacturer, importer and distributor provide information on the products containing hazardous chemicals. Employers are responsible for protecting their employees from chemical hazards present in the workplace along with those brought on site by contractors. The transmittal of this information is accomplished through a Comprehensive Hazard Communication Program.

## SCOPE

Youngstown State University must provide pertinent information to its employees regarding hazardous chemicals to which they may be exposed. This applies to all chemicals which an employee would be exposed to under normal workplace conditions or in a foreseeable emergency. All laboratory and shop personnel come under this definition. Information will be provided on labeling and other forms of warning, the use of Material Safety Data Sheets, (MSDS), and training in the use of hazardous materials. Pesticides, food, beverages, consumer products, drugs, cosmetics intended for personal consumption, and hazardous waste are exempted from this plan<sup>1</sup>.

<sup>1</sup> These items are regulated by agencies other than Occupational Safety and Health Administration.

## POLICY STATEMENT

According to the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard, Youngstown State University will inform its employees of the following:

1. The University has a written Hazard Communication Standard.
2. The details of the standard are located in the Department of Environmental and Occupational Health and Safety (EOHS), 2046 Cushwa Hall.  
Phone number: 330-941-3700.
3. The University will inform its employees of operations in their work area that may involve the use of hazardous materials.
4. A master file of Material Safety Data Sheets (MSDS) is on file in the department of Environmental and Occupational Health and Safety, the Chemical Management Center, and the YSU Police Department. MSDS sheets are also available by assessing the department's Chemical Inventory Program.

The University will provide the necessary training in the handling and use of hazardous materials as required by law.

## EXPLANATION OF A HAZARDOUS MATERIAL

A hazardous material is any chemical which meets any of the following definitions:

**Carcinogen:** As evaluated by the International Agency for Research on Cancer, (IRAC), or listed by the National Toxicology Program (NTP).

**Corrosive:** Capable of causing destruction or alteration to living tissue by chemical action on site after contact.

**Highly Toxic:** With a median lethal dose of 50 (LD50) or 200 mg/kg when administered to albino rats or a median lethal dose concentration (LC) in air of 200 ppm.

**Irritant:** Causing a reversible inflammatory effect on living tissue upon contact.

**Sensitizer:** Causing allergy upon repeated exposure

**Toxic:** A chemical having a LD of 50-150, 200-1000 mg/kg or LC of 200-2000 ppm.

**Target Organ:** Organs affected by specific chemicals.

**Etiologic Agent:** Biomedical or infectious substance.

These characterizations will be provided by the manufacturer on the labels of all incoming chemicals.

## CHEMICAL TERMS

**Absorption:** A mode of entry of a chemical into the body in which the substance enters through the unbroken skin.

**Acute:** A toxic effect that results from a short exposure time to a very high concentration of a toxic substance. The effect is usually immediately noticeable.

**Asphyxiation:** Replacement of or removal of oxygen.

**Allergic Response:** Individual response after an exposure.

**Boiling Point:** The temperature at which the vapor pressure of a liquid just equals atmospheric pressure. Temperature above which a liquid exists as a gas.

**Carcinogen:** A material that can cause cancer.

**Chronic:** A toxic effect that results from exposure to a toxic material over a long period of time, usually months or years. The amount of exposure is very low and the effects are not usually immediately noticeable.

**Combustion Liquid:** Liquid that has a flashpoint 100 degrees Fahrenheit or higher.

**Concentration:** The amount of a material in the air. Also may refer to the amount of a substance in a mixture.

**Corrosive:** A chemical that causes visible destruction of, or alterations in, living tissue by chemical action at contact site.

**Density:** The mass or weight per unit volume of a substance.

**Dermal:** Relating to the skin.

**Dose:** The amount of a substance that enters the body over a period of time.

**Dose Response Relationship:** A larger dose causes a more severe reaction.

**Evaporation Rate:** Rate of change from a liquid to a vapor.

**Explosive:** Chemical that causes a sudden, almost instantaneous release of pressure, gas and heat when subjected to sudden shock, pressure or high temperature.

**Exposure:** Coming into contact with a hazardous chemical.

**Extinguishing Agent:** Material used to put out a fire.

**Flammable Liquid:** A liquid that has a flashpoint below 100 degrees Fahrenheit.

**Flammable Range:** The proportion of gas or vapor in air between the upper and lower flammable limits.

**Flashpoint:** The minimum temperature of the liquid at which it gives off vapors sufficient to form an ignitable mixture with air near the surface of the liquid or the container.

**Fluid:** Anything that flows.

**Foreseeable Emergency:** Any potential occurrence such as, but not limited to, equipment failure, rupture of containers or failure of control of equipment which could result in an uncontrollable release of a hazardous chemical into the workplace.

**Fume:** Solid particles in air, generated by heating a solid material (example: a welding rod).

**Ignitable Mixture:** Mixture of fuel and air within the flammable range.

**Ignition Temperature:** Minimum temperature required to initiate combustion.

**Hazard (chemical):** Any chemical whose presence or use is a physical or health hazard.

**Hazardous Decomposition Products:** Dangerous materials which result from a chemical breakdown of the original material usually over time or high heat or fire.

**Ingestion:** Swallowing.

**Inhalation:** Breathing in.

**Irritant:** Chemical which is not a corrosive that causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.

**Local Effects:** Effect was directly at the point of contact.

**LD-50 (Lethal dose - 50%):** Single dose that will kill half of a laboratory population.

**Lower Flammable Limit (LFL):** The minimum concentration of gas or vapor in air below which ignition will not occur. The mixture is said to be too lean.

**mg/m<sup>3</sup> (milligrams per cubic meter):** A measure of concentration.

**Mist:** Liquid droplets in the air.

**Modes of Entry:** Inhalation is breathing; absorption is entry through the skin, ingestion is swallowing.

**MSDS:** Material Safety Data Sheet.

**Mutagen:** A substance capable of altering the genetic material in a living cell.

**Oxidizer:** A chemical other than a blasting agent or explosive that initiates or promotes combustion in other materials causing fire either by itself or through the release of oxygen or other gases.

**Parts Per Million (ppm):** A measure of concentration.

**Permissible Exposure Limit (PEL):** Concentration in air that has been declared safe to breathe by government regulations.

**Percent Volatile:** The part of a mixture that can evaporate.

**Poison Class A:** A DOT term for extremely dangerous poisons, poisonous gases or liquids that in very small amounts, either as a gas or a vapor of the liquid, mixed with air are dangerous to life.

**Poison Class B:** A DOT term for liquid, solid, paste or semisolid substances other than Class A poisons or irritating materials that are known to be so toxic to humans that they are a hazard to health during transportation.

**Remote Effects:** Damage occurred at a body part some distance from the point of contact.

**Reproductive Toxin:** Affects the male and female reproductive systems. May cause reproductive impairment.

**Respiratory Protection:** Equipment worn to prevent the inhalation of hazardous substances.

**Response:** Toxic effect of a chemical on the body.

**Sensitizer:** A chemical that causes the substantial proportion of the exposed people to develop an allergic reaction in normal tissue after repeated exposure to the chemical.

**Solubility:** How well one material dissolves into another material.

**Solvent:** A substance, usually a liquid, in which other substances are dissolved.

**Specific Gravity:** The weight of a solid or liquid as compared to the weight of an equal volume of water.

**Stability:** A measure of a chemical's reactivity.

**Systemic Poisoning:** A toxic effect on the body in which one or more organs are damaged by a substance.

**Teratogen:** A substance exposure to which by a pregnant female, can result in malformations in the fetus.

**Threshold Limit Value (TLV):** A measure indicating the concentration of a chemical in air that a worker may breathe for a given period of time (dose) without experiencing adverse effects.

Toxic: Capable of causing damage to the body.

Toxicology: The science that studies the harmful effects of chemicals on living things.

Toxic Substance: Any substance that can cause acute or chronic injury to the human body or which is suspected of being able to cause diseases or injury under some conditions.

Upper Flammable Limit (UFL): The maximum concentration of a vapor or gas in air above which ignition will not occur. The mixture is said to be too rich.

Vapor: Gaseous substance in air produced by the evaporation of a liquid.

Vapor Density: Relative Density of a vapor or gas without air present as compared to air. The vapor density of air is 1.0.

Vapor Pressure: Pressure exerted by a vapor on the sides (including the top and bottom) of the container.

Ventilation: Air movement to draw away an air contaminant.

Water Reactive: A chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

#### LIST OF AREAS ON CAMPUS WHICH CONTAIN CHEMICALS

Chemistry	Grounds
Biology	Art
Chemical Engineering	Media Center
Jambar	Print Shop
Materials Engineering	Janitorial Services
Civil & Environmental Engineering	Geology
Environmental & Occupational Health & Safety	Physical Plant

It is understood that the above mentioned areas on campus are not the only users of chemicals. At any point in time any campus office or shop may possess chemicals which fall under the scope of this manual. Any employee having questions pertaining to chemical usage in their job position should contact the Department of Environmental and Occupational Health and Safety.

#### HAZARD DETERMINATION

The University is not required to evaluate chemicals unless it chooses not to rely on the evaluation performed by the chemical manufacturer. The chemicals from the following sources are to be considered hazardous.

Any chemical listed in 29 CFR §1910, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

Any chemical listed in threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment, American Conference of Governmental Industrial Hygienists (ACGIH).

Any chemical listed in the Annual Report on Carcinogens, National Toxicology Program (NTP).

Any chemical listed in Monographs, International Agency for research on Cancer (IARC).

A list of these chemicals can be provided by the Department of Environmental and Occupational Health and Safety.

#### COMPONENTS OF THE HAZARD COMMUNICATION PROGRAM

The University's Hazard Communication program will consist of the following:

A list of chemicals for the University

The methods used by the University to inform employees of the hazards of routine and non-routine tasks.

The method used by the University to inform outside contractors and their employees of the possible hazardous chemicals they may encounter while working on campus.

Labeling policy and descriptions of various labels.

An explanation and description of Material Safety Data Sheets.

Employee Training and information on hazardous chemicals.

#### LIST OF CHEMICALS ON CAMPUS

A list of chemicals present on campus can be found by accessing the Chemical Management Center's chemical inventory program. Information on how to access the program can be found on the department's web site at <http://cc.yzu.edu/eohs/>.

#### INFORMING UNIVERSITY EMPLOYEES

**EMPLOYEES:** Annual hazard communication training will be offered through the Office of Training and Development in conjunction with the Department of Environmental and Occupational Health and Safety (EOHS). New employees will be trained by EOHS when they are assigned to work in areas involving hazardous chemicals.

**STUDENTS:** Students taking courses in which they may be in contact with chemicals and those conducting research that involves the use of chemicals will be trained on safety and safe laboratory practices by the instructor of the class or research.

## INFORMING CONTRACTORS OF POSSIBLE HAZARDS

Contractors are instructed at job meetings to inform EOHS of any hazardous materials they will be using. They can obtain information regarding hazardous materials they may encounter around the area in which they are working by contacting EOHS. Contractors are also required to fill out a Contractor Work Information form (Appendix A). Also a Cutting, Welding and Hot Work Permit form (Appendix B) is to be filled out if such work is to be done by the contractor. The forms can be obtained from the Facilities Department or EOHS.

## LABELING

The manufacturers of chemicals are required to properly label and identify their products. All chemicals being received onto the campus are checked to ensure that all original labels are correct and readable. If the label has been torn during shipment, a new label will be affixed to the bottle or the bottle will be rejected and send back to the supplier. Each time a chemical is transferred from its original container, the new container must be labeled with the following information:

1. Identify by common name
2. Appropriate hazard warnings
3. Name and address of chemical company
4. Important telephone numbers

Chemicals that are transferred to other containers (ex.: beaker or flask) which are going to be used by the employee during their current work shift do not need to be labeled with this information.

## EXPLANATION AND DESCRIPTION OF MATERIAL SAFETY DATA SHEETS

A Material Safety Data Sheet (MSDS) is a technical document which summarizes relevant information about a chemical.

Material Safety Data Sheets consist of the following categories. These are the basic actions of a MSDS. The sections may not occur in this order, but this information should be on all MSDS sheets. Additional information may be provided by some manufacturers such as Special Precautions or Storage and Handling of a particular product. Whether or not these extra sections are included, the basic MSDS should contain all the pertinent information needed by the worker to safely and effectively complete his/her job duties. If the pertinent information cannot be located on the MSDS, the supervisor or EOHS should be contacted before beginning the task.

EOHS maintains a current and updated master file of all Material Safety Data Sheets. MSDS sheets can also be obtained by accessing the Chemical Management Center's chemical inventory or through internet sites. Requests for MSDS sheets should be made to EOHS or the Chemical Management Center.

## SECTIONS OF A MATERIAL SAFETY DATA SHEET

Chemical identity	This section contains the chemical and common name as well as the manufacturer's name, address, and telephone number. This section usually also contains emergency numbers in case of a spill, fire, or exposure to the chemical.
Hazardous ingredients	This section consists of the hazardous ingredients of the product and the quantities
Physical and chemical characteristics	This section gives the physical and chemical hazards that are associated with the chemical. Examples of physical hazards would be flammability, flashpoint, vapor pressure, etc.
Fire and explosion hazard details	The section tells whether the chemical is a fire or explosive hazard and at what temperature this chemical will burn or explode. It also gives recommended extinguishing agents and fire fighting methods.
Reactivity	This section gives the hazards of reactivity. It tells which other chemicals the chemical will react with and what kind of reactions will occur.
Health hazard	This section consists of the hazards which may occur to a user's health or well being. It tells whether the chemical has caused cancer in laboratory animals or if the chemical will affect the vital organs.
Proper handling of spills and disposal	This section gives proper spill measures as well as the correct disposal procedures in the event of a spill. This section will also include recommended procedures for the safe handling of the product.
Special protection	This section tells of necessary personal protective equipment to safely handle the chemical. It gives the proper respiratory protection needed, as well as whether gloves and other protective measures are necessary.

## EMPLOYEE TRAINING AND INFORMATION SCOPE

The University will train and give information to employees on hazardous chemicals in their work area prior to initial assignment and each time a new hazard is introduced into their work site. The University will provide the following:

1. A statement on the requirements of the Hazard Communication Standard.
2. Areas of the workplace where hazardous chemicals are used.
3. Location of Material Safety Data Sheets and information on labeling of chemicals.
4. The training of employees will include at least the following.
  - a. Methods and observations to detect the presence and release of hazardous materials.
  - b. The physical and health hazards of the chemicals with which they come into contact.
  - c. The types of personal protective equipment necessary to protect themselves from hazards.
  - d. The details of the Hazard Communication Standard pertaining to proper labeling and the use of Material Safety Data Sheets.

## EMPLOYEE TRAINING MODULE

Many current employees and newly hired employees are not aware of the Hazard Communication Standard and their right to know the types of hazards present on their job site. Training helps to reinforce the aspect of personal safety and health. Training of employees will be accomplished through a Training Module (Appendix C) as well as instructional videos provided by the Department of Environmental and Occupational Health and Safety. The Training Module can also be located on EOHS's website at <http://cc.yosu.edu/eohs/> under Safety Training.

## OBJECTIVES OF THE TRAINING MODULE

After completion of the training module, the employee will be able to:

1. Understand the methods and observations to detect the presence of hazardous chemicals in the workplace.
2. Know the physical and health hazards of the chemicals with which they work.
3. Know about the availability and use of personal protective equipment to minimize exposure to hazardous chemicals.
4. Know how to read and understand labeling and MSDSs.

## PROTECTION AGAINST EXPOSURE

Employees can protect themselves from the hazards of chemical materials in a variety of manners. The following is a list of ways employees can protect themselves.

1. Use of Common Sense: If a chemical looks hazardous, treat it as a hazard. Do not approach any chemical which is on fire or is leaking. Notify Campus Police and the Department of Environmental and Occupational Health and Safety.
2. Read labels: Read the label of a chemical before starting a task. Check for all hazards and consult the MSDS if further information is needed.
3. Use of Protective Equipment: Do not touch, smell (breathe) or taste any chemicals. Use protective equipment such as gloves, hard hats, safety goggles, safety shoes, safety clothes and respirators when the situation calls for this type of protection.
4. Ventilation: Make sure when you are working with hazardous chemicals that you are working in a well-ventilated area. Never enter a confined area which may contain chemicals without proper protective equipment.
5. Evacuation Procedures: In case of an emergency involving chemicals, know the closest route of evacuation along with alternate routes.

## RESPONSIBILITIES OF EMPLOYEES

Hazard communication depends on both the employer and the employees. Employees need to act responsibly by avoiding incidents and accidents. This can be accomplished by doing the following:

1. Identify the hazards before you start a job.
2. Respect all precautions and warning signs.
3. Ask your supervisor or contact the Department of Environmental and Occupational Health and Safety when in doubt.
4. Read labels and MSDS sheets.
5. Know where to find hazard communication information.
6. Treat hazardous chemicals with respect.
7. Use the correct personal protective equipment.
8. Practice safe work habits.

If you notice or know of unsafe situations, notify your supervisor and EOHS.