Hazard Communication & Right-To-Know:
Employees of the University of Tennessee at Knoxville have the right to know the properties and potential safety and health hazards of substances to which they may be exposed. Such knowledge is essential to reducing the risk of occupational illness and injury.
Goals of Right to Know

• To help you reduce the risks involved in working with hazardous materials;

• To transmit vital information to employees about the potential hazards of substances in the work place;

• To reduce the incidence and cost of illness and injury resulting from hazardous substances;

• To encourage a reduction in the volume and toxicity of hazardous substances used in the workplace.
Elements of Our Hazard Communications Program

1. Material Safety Data Sheets (MSDSs)

2. Chemical Labeling and Marking Requirements

3. Written Program
Quiz Time!

Circle the correct answer below.

1. One of the goals of the University right-to-know plan is:
   a. To eliminate bureaucratic red tape.
   b. To help reduce the risks involved in working with hazardous chemicals.
   c. To increase productivity.

2. Labeling and marking is not a part of the Hazard Communication Program.
   a. True
   b. False
Quiz Time!

Circle the correct answer below.

1. The Hazard Communication plan is often referred to as:
   a. The Chemical Hygiene Plan
   b. The Right-To-Know Plan
   c. The Emergency Response Plan

2. As an employee of the University you should be informed of the known properties and potential health and safety hazards of substances in which you may be exposed.
   a. True
   b. False
Introduction

The Material Safety Data Sheet (MSDS) is a detailed information bulletin prepared by the manufacturer or importer of a chemical that describes the physical and chemical properties, physical and health hazards, routes of exposure, precautions for safe handling and use, emergency and first-aid procedures, and control measures. Information on an MSDS aids in the selection of safe products and helps prepare employers and employees to respond effectively to daily exposure situations as well as to emergency situations.
MSDS’s (cont.)

The MSDSs are a comprehensive source of information for all types of employers. There may be information on the MSDS that is not useful to you or not important to the safety and health in your particular operation. Concentrate on the information that is applicable to your situation. Generally, hazard information and protective measures should be the focus of concern.
Your Rights

1. Your workplace is required to have Material Safety Data Sheets available for every single hazardous chemical or substance you use or encounter as a part of your job.

2. These must be readily available for employee review at all times you are in the work place!

3. If you request to see an MSDS for a product you use at work, and your employer cannot show it to you, after one working day you may refuse to work with that product until you are shown the correct MSDS.

4. If you request your own personal copy of a Material Safety Data Sheet, your employer has 15 working days to provide it.
If you do not know where the MSDSs for your area are kept, find out!
Employer Responsibilities

Employers must ensure that each employee has a basic knowledge of how to find information on an MSDS and how to properly make use of that information. Employers also must ensure the following:

- Complete and accurate MSDSs are made available during each work shift to employees when they are in their work areas.
- Information is provided for each hazardous chemical.
# What Information is Provided on an MSDS?

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<td>Physical Data</td>
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Special Precautions
OSHA specifies the information to be included on an MSDS, but does not prescribe the precise format for an MSDS. A non-mandatory MSDS form that meets the Hazard Communication Standard requirements has been issued and can be used as is or expanded as needed. The MSDS must be in English and must include at least the following information:
Quiz Time!

Circle the correct answer below.

1. Material Safety Data Sheets are brief bulletins prepared by line foreman and are normally used for inventory control.
   a. True
   b. False

2. Complete and accurate MSDSs must be made available during each work shift to employees when they are in their work areas.
   a. True
   b. False
Section I - Chemical Identity

• The chemical and common name(s) must be provided for single chemical substances.

• An identity on the MSDS must be cross-referenced to the identity found on the label.
Section II - Hazardous Ingredients

- For a hazardous chemical mixture that has been tested as a whole to determine its hazards, the chemical and common names of the ingredients that are associated with the hazards, and the common name of the mixture must be listed.

- If the chemical is a mixture that has not been tested as a whole the chemical and common names of all ingredients determined to be health hazards and comprising 1 percent or greater of the composition must be listed.
Section II - Hazardous Ingredients (cont.)

- Chemical and common names of carcinogens must be listed if they are present in the mixture at levels of 0.1 percent or greater.

- All components of a mixture that have been determined to present a physical hazard must be listed.

- Chemical and common names of all ingredients determined to be health hazards and comprising less than 1 percent (0.1 percent for carcinogens) of the mixture must also be listed if they can still exceed an established Permissible Exposure Limit (PEL) or Threshold Limit Value (TLV) or present a health risk to exposed employees in these concentrations.
Section III - Physical and Chemical Characteristics

- The physical and chemical characteristics of the hazardous substance must be listed. These include items such as boiling and freezing points, density, vapor pressure, specific gravity, solubility, volatility, and the product's general appearance and odor. These characteristics provide important information for designing safe and healthful work practices.
Section IV - Fire and Explosion

Hazard Data

- The compound's potential for fire and explosion must be described. Also, the fire hazards of the chemical and the conditions under which it could ignite or explode must be identified. Recommended extinguishing agents and firefighting methods must be described.
Section V - Reactivity Data

• This section presents information about other chemicals and substances with which it reacts. Information on any hazardous decomposition products, such as carbon monoxide, must be included.
Section VI - Health Hazards

- The acute and chronic health hazards of the chemical, together with signs and symptoms of exposure, must be listed. In addition, any medical conditions that are aggravated by exposure to the compound, must be included. The specific types of chemical health hazards defined in the standard include carcinogens, corrosives, toxins, irritants, sensitizers, mutagens, teratogens, and effects on target organs (i.e., liver, kidney, nervous system, blood, lungs, mucous membranes, reproductive system, skin, eyes, etc.).

- The route of entry section describes the primary pathway by which the chemical enters the body. There are three principal routes of entry: inhalation, skin, and ingestion.
Section VI - Health Hazards (cont.)

• This section of the MSDS supplies the OSHA PEL, the ACGIH TLV, and other exposure levels used or recommended by the chemical manufacturer.

• If the compound is listed as a carcinogen (cancer-causing agent) by OSHA, the National Toxicology Program (NTP), or the International Agency for Research on Cancer (IARC), this information must be indicated on the MSDS.
Section VII - Precautions for Safe Handling and Use

• The standard requires the preparer to describe the precautions for safe handling and use. These include recommended industrial hygiene practices, precautions to be taken during repair and maintenance of equipment, and procedures for cleaning up spills and leaks. Some manufacturers also use this section to include useful information not specifically required by the standard, such as EPA waste disposal methods and state and local requirements.
Section VIII - Control Measures

- The standard requires the preparer of the MSDS to list any generally applicable control measures. These include engineering controls, safe handling procedures, and personal protective equipment. Information is often included on the use of goggles, gloves, body suits, respirators, and face shields.
Quiz Time!

Circle the correct answer below.

1. OSHA specifies the information to be included on an MSDS, but does not prescribe the precise format for an MSDS.
   a. True
   b. False

2. The acute and chronic health hazards of the chemical, together with signs and symptoms of exposure, must be listed.
   a. True
   b. False
OSHA Requirements

Employers must maintain a complete and accurate MSDS for each hazardous chemical that is used in the facility. They are entitled to obtain this information automatically upon purchase of the material. When new and significant information becomes available concerning a product's hazards or ways to protect against the hazards, chemical manufacturers, importers, or distributors must add it to their MSDS within three months and provide it to their customers with the next shipment of the chemical. Employers must have an MSDS for each hazardous chemical used in the workplace. If there are multiple suppliers of the same chemical, there is no need to retain multiple MSDSs for that chemical.
OSHA Requirements (cont.)

While MSDSs are not required to be physically attached to a shipment, they must accompany or precede the shipment. When the manufacturer/supplier fails to send an MSDS with a shipment labeled as a hazardous chemical, the employer must obtain one form the chemical manufacturer, importer, or distributor as soon as possible. Similarly, if the MSDS is incomplete or unclear, the employer should contact the manufacturer or importer to get clarification or obtain missing information.
**OSHA Requirements (cont.)**

When an employer is unable to obtain an MSDS from a supplier or manufacturer, he/she should submit a written complaint, with complete background information, to the nearest OSHA area office. OSHA will then call and send a certified letter to the supplier or manufacturer to obtain the needed information. If the supplier or manufacturer still fails to respond within a reasonable time, OSHA will inspect the supplier or manufacturer and take appropriate enforcement action.
Material Safety Data Sheet Checklist

If you work in a laboratory or other situation where you create your own chemical solutions or products for use in your workplace, you may need to write your own MSDS for the product(s) you have created.
Material Safety Data Sheet Checklist (cont.)

You must ensure that each MSDS you write contains the following information:

• Product or chemical identity used on the label.
• Manufacturer's name and address
• Chemical and common names of each hazardous ingredient.
• Name, address, and phone number for hazard and emergency information.
• Preparation or revision date.
• The hazardous chemical's physical and chemical characteristics, such as vapor pressure and flash point.
• Physical hazards, including the potential for fire, explosion, and reactivity.
Material Safety Data Sheet Checklist (cont.)

- Known health hazards.
- OSHA permissible exposure limit (PEL), ACGIH threshold limit value (TLV) or other exposure limits.
- Emergency and first-aid procedures.
- Whether OSHA, NTP or IARC lists the ingredient as a carcinogen.
- Precautions for safe handling and use.
- Control measures such as engineering controls, work practices, hygienic practices or personal protective equipment required.
- Primary routes of entry.
- Procedures for spills, leaks, and clean-up.
Quiz Time!
Circle the correct answer below.

1. When the manufacturer/supplier fails to send an MSDS with a shipment labeled as a hazardous chemical, the employer must obtain one form the chemical manufacturer, importer, or distributor as soon as possible.
   a. True
   b. False

2. In addition to known health hazards and routes of exposure an MSDS should contain procedures for spills, leaks and clean-up.
   a. True
   b. False
Labels and Marking Systems

NFPA Diamond

Blue = Health Hazard
Red = Flammability
Yellow = Reactivity
White = Special Hazard Information
Labels and Marking Systems (cont.)

- UTK buildings will have NFPA diamonds located inside the main entrance (usually near the fire alarm panel) or on the outside of the main entrance door. Each diamond represents a different hazard (see NFPA Diamond).

- A numerical rating will also be provided in the blue, red, and yellow diamonds. This number indicates the severity of the hazard, with a 0 indicating no hazard and 4 indicating the most severe hazard.
• These placards represent the "worst" of what is in the building, but they will not provide specific chemical names, quantities, or locations. They are designed to give emergency personnel a general idea of the worst hazards present in a building or area.
Quiz Time!

Circle the correct answer below.

1. The color “Red” on the NFPA diamond represents:
   a. Reactivity
   b. Special Hazard Information
   c. Flammability

2. UTK buildings will have NFPA diamonds located inside the main entrance (usually near the fire alarm panel) or on the outside of the main entrance door.
   a. True
   b. False
HMIS Labels

- The HMIS labeling system operates on the same principle as the NFPA diamond. Blue indicates health hazard, red indicates flammability, yellow indicates reactivity, and special information (such as what personal protective equipment to wear) will be provided in the white section. It also uses a numerical system from 0-4 to indicate the severity of the hazard.

- These labels should be used on individual containers of hazardous materials (ie. barrels, bottles, cans, buckets, tubs, etc) so that there are never any unlabeled containers in the work area. It is recommended that they be used on all containers, even if the manufacturer's label is still in place; however, this is just a recommendation.
HMIS Labels (cont.)

If a product or chemical is removed from its original container into another container which does not have a manufacturer's label, the second container must be labeled with an HMIS label with the appropriate information filled out.

Always regard unlabeled containers as dangerous!
HEALTH (Blue)

4

Deadly: even the slightest exposure to this substance would be life threatening. Only specialized protective clothing, for these materials, should be worn.

3

Extreme Danger: serious injury would result from exposure to this substance. Do not expose any body surface to these materials. Full protective measures should be taken.
HMIS Labels (cont.)

HEALTH (Blue)

2

Dangerous: exposure to this substance would be hazardous to health. Protective measures are indicated.

1

Slight Hazard: irritation or minor injury would result from exposure to this substance. Protective measures are indicated.

0

No Hazard: exposure to this substance offers no significant risk to health.
HMIS Labels (cont.)

FLAMMABILITY (Red)

4

Flash Point Below 73°F and Boiling Point Below 100°F: this substance is very flammable, volatile or explosive depending on its state. Extreme caution should be used in handling or storing of these materials.

3

Flash Point Below 100°F: flammable, volatile or explosive under almost all normal temperature conditions. Exercise great caution in storage or handling of these materials.
HMIS Labels (cont.)

FLAMMABILITY (Red)

2

Flash Point Below 200°F: moderately heated conditions may ignite this substance. Caution procedures should be employed in handling.

1

Flash Point Above 200°F: this substance must be preheated to ignite. Most combustible solids would be in this category.

0

Will Not Burn: substances that will not burn.
HMIS Labels (cont.)

REACTIVITY (Yellow)

4

May Detonate: substances that are readily capable of detonation or explosion at normal temperatures and pressures. Evacuate area if exposed to heat or fire.

3

Explosive: substances that are readily capable of detonation or explosion by a strong initiating source, such as heat, shock or water. Monitor from behind explosion-resistant barriers.
HMIS Labels
(cont.)

REACTIVITY (Yellow)

2

Unstable: violent chemical changes are possible at normal or elevated temperatures and pressures. Potentially violent or explosive reaction may occur when mixed with water. Monitor from a safe distance.

1

Normally stable: substances that may become unstable at elevated temperatures and pressures or when mixed with water. Approach with caution.

0

Stable: substances which will remain stable when exposed to heat, pressure or water.
Laboratory Signage

Laboratories should be marked with the appropriate pictographic symbols to warn employees, visitors, and emergency responders what precautions should be observed when entering the laboratory, as well as what hazards to expect inside.

**EHS can provide pictographs for a variety of hazards such as these:**

- [BIOHAZARD](#)
- [ELECTRICAL HAZARD](#)
- [OXIDIZERS](#)
Quiz Time!

Circle the correct answer below.

1. The numbers 0-4 on the HMIS label indicate the severity of the hazard. The higher the number the less severe the hazard.
   a. True
   b. False

2. Pictographic symbols create confusion and should never be used in the workplace.
   a. True
   b. False
WRITTEN COMMUNICATION PROGRAM

Each department head will assure that all hazardous chemicals in or leaving the workplace shall be properly labeled, tagged or marked in a manner which complies with the act and does not conflict with any other regulation pertaining to hazardous materials. Labels will identify the hazardous chemical, provide the appropriate hazard warning and give the name, address and telephone number of the chemical manufacturer or responsible party. Existing labels on containers of hazardous chemicals will not be removed or defaced. An employee will not be required to work with a hazardous chemical from an unlabeled container except when that employee places the chemical in a temporary container and immediately (the same day) uses the substance.
However, to enhance compliance with good safety practice, employees should affix contents identification labels to all containers. Each unit head will assure that a procedure exist to review and update label information when required. Updates will be performed anytime revised information is made available and the currency of the information will be checked at a minimum of once per year.

The University of Tennessee written Hazard Communication Program (in full content) can be found in the University Safety Manual and/or on the web at:

http://web.utk.edu/~ehss/hazard/rtknow.htm
HAZARD COMMUNICATION - RIGHT-TO-KNOW TRAINING PROGRAM

The Hazard Communication Right-To-Know Standard requires the University of Tennessee, Knoxville (UTK) to inform employees about the hazards of chemicals and substances used in various workplaces on campus. The Standard applies to any chemicals known to be present in the employee's workplace which the employee may be exposed to under normal conditions of use or in a foreseeable emergency. Transmittal of information is to be accomplished by means of a comprehensive hazardous chemical communication program, which will include container labeling, inventory of workplace chemicals, provision of Material Safety Data Sheets (MSDS) and employee training.
HAZARD COMMUNICATION - RIGHT-TO-KNOW TRAINING PROGRAM
(cont.)

The respective unit head shall conduct a training program that will assure that employees working with hazardous chemicals will develop an acceptable understanding of the safe use and handling of hazardous chemicals. New employees assigned to work with hazardous chemicals will be provided training prior to beginning work. The training program will include procedures to be followed in case of an emergency.
HAZARD COMMUNICATION - RIGHT-TO-KNOW TRAINING PROGRAM

(cont.)

The inventory list of the chemicals used in the workplace and the MSDSs will be used to determine the specific training needs of the employees of respective departments.

After the initial training of employees, an annual refresher training program will be provided. Training records and dates will be kept on each employee receiving the training. At least once per year, the department head will forward a statement to the Department of Environmental Health and Safety certifying that all applicable employees have been properly trained. Hazardous Communication (Right-To-Know) training records will be maintained within the unit files.
Quiz Time!

Circle the correct answer below.

1. It is the responsibility of the campus safety department to assure that all hazardous chemicals in or leaving the workplace shall be properly labeled, tagged or marked.
   
   a. True
   
   b. False

2. New employees assigned to work with hazardous chemicals will be provided training prior to beginning work.
   
   a. True
   
   b. False