

ENVIRONMENTAL, SAFETY, AND RECYCLING OFFICE

INTRODUCTION TO THE HAZARD COMMUNICATION PROGRAM

In 1993, the Massachusetts Right-to-Know Law was preempted for private employers by a federal regulation created by the Occupational Safety and Health Administration known as the OSHA Hazard Communication Standard (HC Standard). Both regulations have a similar purpose and, under the new requirements, a written Hazard Communication (HC) Program was created for the University. This manual will describe the basic elements of the University's HC Program and begin the training process for new employees.

The Hazard Communication Standard clarifies a portion of the rights that all University employees have under Occupational Safety and Health Act of 1970. Specifically, the Hazard Communication Standard requires the University to provide information and training to employees about the hazardous chemicals they may be exposed to in their workplace.

HOW THE HAZARD COMMUNICATION STANDARD WORKS

Chemicals purchased for use at the University have been assessed by their manufacturer or distributor for their potential to create a health risk or a physical hazard. These chemicals may be the pure chemicals used in laboratories or they may be chemical products such as glues, paints, cleaners, and lubricants. These chemicals may also be in any physical state (i.e. Liquids, solids, gases, etc...) and packaged in many different ways (i.e. bottles, bags, drums, cylinders, etc...). Only those chemicals meeting the OSHA definition of "hazardous" are covered by the Hazard Communication Standard.

Chemical manufacturers or distributors are required by law to provide proper chemical product labeling and to create a Safety Data Sheet (SDS) for each product. The labels and SDS sheets are prepared in a manner that provides the user with safety information concerning the product.

Chemical labels are required to display a "brief" statement of the hazard associated with a chemical. Most of the labels seen at the University are prepared to the requirements of the U. S. Consumer Products Safety Commission. They contain a "signal word" followed by a description of the specific hazards of that chemical. The intentions are to communicate some basic information concerning the hazards of using the product. Beginning in June 2015 OSHA mandated that chemical labels begin including additional information. The additional information now on labels includes more specific hazard statements, related precautionary statements, and a pictogram. There are now six elements on a label, which work cohesively together in order to communicate a physical or health hazard. More information concerning labeling can be found further along in this document.

NOTE: Since the University maintains an inventory of chemical products it is very likely that employees will find some containers labeled with only 4 of the above elements. This can be attributed to the fact that the chemical product was in storage before the pictogram (and other enhanced GHS label requirements (i.e. precautionary statement)) took effect in 2015. Therefore, employees should always pay the closest attention to the signal word and hazard statement elements of the label.

Chemical Safety Data Sheets (SDS) are intended to provide the chemical user with knowledge on how to use the product safely. The University obtains these SDS with the first shipment of any chemical or when the product is reformulated or the SDS revised. A copy, or the original, of any SDS that arrives on campus should be forwarded to the Facilities Maintenance Office at the CUB for inclusion into our online access system. This online system or "eBinder" allows for searching all of the University's SDS (from any computer on campus) as well as reading and printing the sheet(s). The SDS search program is located at the Facilities Management web page, accessible from the Resources list on the University's home page. The left side of the page menu button will take you to the "MSDSonline" search engine for the University's SDS file.

This instruction manual will give basic instructions on how to understand labels and how to access other information on the chemicals used on campus. Your supervisor will give you instructions on the chemicals you may use on your job.

An employee's rights under the Hazard Communication Standard include access to information on any chemical used in his/her workplace which might include chemicals used by other employees or contractors.

WHAT IS A CHEMICAL

The chemicals covered by the standard include substances in any physical form; liquids, solids, gases, vapors, fumes, or mists whether they are in a container or not. Some of the chemicals used at Western New England University are pure chemicals for use primarily in Science and Engineering laboratories. These are identified by a chemical name and, in many cases, a Chemical Abstract Service (CAS) number.

The majority of chemicals used at Western New England University are chemical products; mixtures of different chemicals intended to perform a certain purpose. These include the paints, glues, cleaners, lubricants, and Other products that might be found in a home as well as on the job. They are identified by the combination of manufacturer's name and the name of the product. For example: "Buckeye Aqua Dust", "Krylon Fluorescent Spray Paint", or "Mobil Multi-Purpose ATF".

WHAT IS A HAZARDOUS CHEMICAL

The Hazard Communication Standard covers only "hazardous" chemicals. The Occupational, Safety and Health Administration has established a set of definitions and specific tests to define which chemicals may present a hazard. Over 10,000 chemicals are now considered hazardous. This information allows a chemical manufacturer to identify which products are to be considered hazardous and to communicate the correct hazard information for each chemical or mixture of chemicals.

Many of the chemicals used on campus are not hazardous. Many other products have been reformulated to make them less hazardous. While these chemicals may be very useful it is often the hazardous characteristic of a chemical that makes it an effective tool. The cleaners that kill fungus, the gasoline that burns in the lawn mowers, the acids that etch circuit boards are just a few examples of hazardous chemicals that provide vital services to various campus functions. Please note that just because a chemical is considered non-hazardous does not mean the University should ignore the labeling and MSDS requirements of the HC standard.

CHEMICALS THAT CAN CAUSE INJURIES (PHYSICAL HAZARDS)

I. FIRE

Fire can cause serious or even fatal personal injuries as well as property damage. To determine how easily a Chemical will start to burn; a "flash point test" is used. Chemicals with flash points below 100 degrees Fahrenheit are labeled "**Flammable**" and those with flash points between 100 and 200 degrees Fahrenheit are labeled "**Combustible**". If a chemical has a flash point above 200 degrees Fahrenheit it is not considered a fire hazard because even though it may burn, it is not likely to cause the start of a fire. The chemicals that start a fire most readily are labeled "**Extremely Flammable**". These chemicals have both a low flash point and a high evaporation rate. This combination will create an explosive atmosphere quickly by producing a vapor mixed with air. Pure alcohols, acetone, and spray cans will bear this label.

II. EXPLOSION OR UNSTABLE REACTION

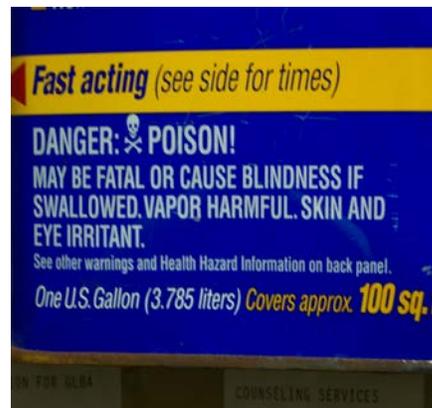
"**Compressed Gas**" and "**Reactive**" chemicals are also considered hazardous because they have the potential to explode and cause physical injury or the release of other potential hazardous chemicals. An "**Oxidizer**" is a type of a reactive chemical that will contribute oxygen to a fire. Oxygen and many other chemicals such as chlorine compounds will make a fire become hotter and spread faster. Any cylinder under pressure is considered a Hazardous Material even if it contains a "**Non-Flammable**" gas such as carbon dioxide or helium. A rupture of the cylinder or a broken valve might propel the cylinder with considerable force. Even a controlled release of a compressed gas will absorb energy fast enough to create freezing temperatures and the danger of frost bite.



CHEMICALS THAT MAY CAUSE ADVERSE HEALTH EFFECTS (HEALTH HAZARDS)

I. HEALTH IMPACTS

The word **“Poison”** identifies that a chemical that is capable of having an adverse effect on a person’s health. Although there are standardized tests to determine if a chemical is poisonous, these health effects can be very complex. A poison is something that will have an adverse health effect in a part of the body other than where the poison made contact. Certainly things that are swallowed may be circulated through out the body but so can chemicals that are inhaled or absorbed through the skin. Much like a food allergy where something that is eaten may cause a reaction on the skin, are often complex is the relationship between the body part that is exposed to the chemical and the body part that is impacted by the health effect. For example; some chemicals may be absorbed through the skin while some may not; others are toxic if inhaled; and some if swallowed. Some chemicals, such as metallic fumes, will affect the nervous system and thinking processes, while others just the liver, or the lungs and so on. Some chemicals will cause immediate impacts referred to as **“Acute”** effects such as loss of consciousness or organ failure. Others may cause **“Chronic”** effects that may not be noticed for years. For this reason poisonous chemicals are labeled with a reference to **“Route of Entry”** and **“Target Organ”** so that users can better avoid exposures or trace adverse health effects. The chemical label on the right is from a chemical that may be fatal if swallowed but is only an irritant to skin and eyes.



Route of Entry: Swallowed.
Target Organ: Eyes or entire body (fatal).
But for skin or eye contact it is only an irritant.

II. CORROSIVES

The ability of a chemical to eat away the surface of an object or a person’s flesh is termed corrosivity. This is measured using the pH scale. Either of the extremes on the scale; low Ph (0-4), which are the acids, and high pH (10-14), which are the alkalines (or caustics), are considered **“Corrosive”**. These chemicals injure at their point of contact whether on the skin, in the eyes, or inhaled into the respiratory tract. These chemicals are capable of injuries that may leave permanent tissue damage. The terms “non-acid” or “biodegradable” might be on the label but the chemical may still be corrosive.



III. IRRITANTS

“Irritant” chemicals are a very common type of hazard in the workplace. These chemicals have an acute (immediate) health affect that is only temporary in nature. This may be skin inflammation, watery eyes, coughing, or other noticeable reaction to a chemical exposure. These health effects are hazardous if they lead to other risks such as blurred vision or shortness of breath. These health effects are not permanent and will begin to subside when the exposure to the chemical is reduced.

Other terms are used for unusual hazards or subdivisions of common hazards. Questions regarding any terms can be brought to your supervisor or the ESRM.



WHAT CHEMICALS ARE NOT COVERED BY THE STANDARD

Chemicals considered non-hazardous by OSHA are not covered by the HC Standard. In addition, the following “chemicals” are not covered by the requirements of the HC Standard primarily because they are covered by more detail requirements in other regulations.

- Hazardous waste as defined by State or Federal regulations. (For example: motor oil is covered by the HC Standard but waste oil is not because the hazardous waste regulations have their own labeling and training requirements.)
- Tobacco and tobacco products.
- Wood or wood products. (This exception does not include wood dust).
- Food, drugs, or cosmetics intended for personal consumption or use by employees while in the workplace.
- Any drug defined by the Federal Food, drug, and Cosmetic Act which is in a solid form for direct administration to patients (e.g. pills).
- Consumer products, as defined by the Consumer product Safety Act, when the employer can demonstrate that they are used in the workplace in the same manner as normal consumer use and that the workplace use results in no greater exposure than experienced by consumers.
- Chemicals that have already been incorporated into a finished item are not covered by the HC Standard. These “articles”, as they are known, are things like a desk that contains the glue, paints, and other chemicals used in its manufacture.



LABELS

The manufacturer or distributor of a chemical is required to put basic hazard information on the label of each chemical package. Labels vary widely in their appearance but they all relate the same required hazard information. Most chemicals used on campus are packaged as they would be for sale at a local store. These items have warning labels created to a standard set by the Consumer Products Safety Commission. On these labels, the hazard words are in **BOLD** print, such as **FLAMMABLE**, **TOXIC**, **CORROSIVE** etc...followed by a statement describing the hazard. These terms and statements are often preceded by a “Signal Word” indicating the level of seriousness of the hazard. Starting with the most serious these words are: **DANGER** and **WARNING**. See below for further description. A final important label element is the pictograms. There are nine total pictograms, each representing a different hazard. The pictograms work together with the other label elements to help clearly communicate the chemical hazard.

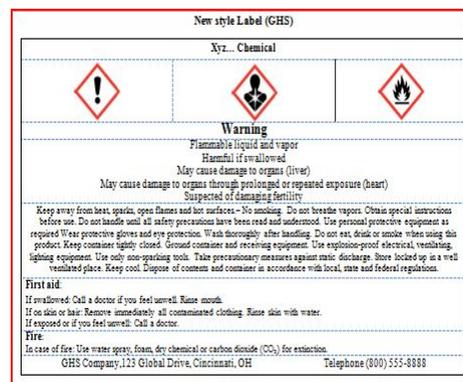


WHAT ARE SIGNAL WORDS?

Signal words are several expressly defined words that indicate the severity of a hazard. These words precede any other hazard statements on a label. Appropriate signal words are selected by a manufacture according to rules set out by the Consumer Products Safety Administration based on a Standard developed by the American National Standards Institute (ANSI). The brief vocabulary established by these rules relates a simple hierarchy based on the severity of a hazard. This hierarchical order and the defined meanings of these words are the first step in understanding the hazards of a chemical. These words are: **WARNING**, and **DANGER**.

WARNING

- a moderate hazard;
- a hazard that may cause serious injury;
- a hazard that may be created if the chemical is used improperly;
- a chemical that can cause physical injury if not treated promptly or death by ingesting more than a teaspoon.



DANGER

- a severe hazard
- a hazard that will cause death or serious injury
- a serious hazard even if the chemical is used properly;
- a chemical that can cause immediate eye damage on contact or death by ingesting just a few drops.
- Example:

1. The **DANGER** Signal Word is found on campus most often on spray cans that contain a flammable solvent. First, any cylinder under pressure, regardless of its contents, is considered a Hazardous Material. Second, this chemical is used properly by spraying, that is mixing the contents with air and in effect creating an explosive atmosphere.



WHAT ARE PICTOGRAMS?



OXIDIZER



FLAMMABLE



EXPLOSIVE



TOXIC



CORROSIVE



COMPRESSED
GAS HAZARD



HEALTH HAZARD



ENVIRONMENTAL



IRRITANT

SAFETY DATA SHEETS

The primary means of communicating chemical hazard information is the Safety Data Sheet (SDS). These single or multi-paged documents can contain up to 16 sections (GHS versions) and are prepared by the manufacturer or distributor of the chemical. Although they vary widely in general appearance, all SDS are required to cover certain basic information. Identities of the ingredients are listed down to 1% for hazardous chemicals and 0.1% for chemicals that may cause cancer. Physical characteristics help to determine how a chemical should be handled. First aid and fire fighting information will help to understand what to do in an emergency. Exposure limits and symptoms are noted as well as how best to control possible exposures.

NOTE: The paper and electronic University SDS files may contain both Global Harmonized System (GHS) compliant (16 sections) and non GHS compliant SDS versions. Some chemicals were on campus before the GHS format took effect. While these SDS have been maintained, they have not been updated since the product is no longer used or stored on Campus. When possible, separate folders are maintained for GHS versions, versus non GHS versions, of SDS sheets for the active inventory chemical products.

THE WESTERN NEW ENGLAND UNIVERSITY HAZARD COMMUNICATION PROGRAM

1. A written HC Program to establish exactly how the University will comply with the regulation. This document can be read or printed from the web page for the University's ESRM.
2. A list of the Hazardous Chemicals used at Western New England University. Since this list is constantly changing, it is kept as a separate data file by the University's ESRM.
3. The University's file of all of the Safety Data Sheets that have been received from the manufacturers or distributors of the chemicals used on campus. These SDS contain information specific to that chemical or product. Information describing the chemical hazard, the recommended personal protective equipment, first aid procedures, and other useful types of information will be found in these sheets. All of the SDS for the University can be accessed at the Facilities Management web page, accessible from the Faculty and Staff shortcut tab at the main University home page. Any employee can enter this website, search the data base, and read or print a SDS. A search can be entered using the chemical name, manufacturer's name (or a portion of those names), or a CAS number. When an employer such as Western New England University buys a chemical, the SDS for that chemical is sent at the time of the first purchase. These SDS should be forwarded to the ESRM at the Campus Utilities Building (CUB). If you would like to, you may keep a copy for your own use, however, the same document will be available through the University's SDS search site and this system will automatically search for the most recent version of each SDS. Conversely, if you can't identify an SDS on the web site for a chemical found in your work area, contact the ESRM.

In addition to these three basic written items, two other program components will help you better understand the chemicals in your work area. These components are a training program of which this presentation is part. When you begin work your supervisor will complete the training by introducing you to the chemicals and accepted handling procedures used in your work area. The other component is the labeling that conveys hazard information and provides a quick reference for emergency situations.

ADDITIONAL LABELING AT WESTERN NEW ENGLAND UNIVERSITY

It is important that the original manufacturer's label be kept visible and in readable condition if at all possible. Do not remove, mark over, or spill onto the hazard warning information on these labels. If the label does become unreadable, or, if the chemical is moved to another container, that new container must have the same label information as the original. The minimum that new label must have is:

1. The identity of the chemical; either a chemical name or a combination of manufacturer & product name. (For example: "ethyl acetate" or "Buckeye Aqua Dust".)
2. Which type or types of hazard is associated with the chemical; using the word for hazard (For example: **Flammable, Toxic**, etc.)
3. For Toxic, Poison, or Irritants, the Route of Entry and Target Organ if given on the original label. (For example: "Irritant to Eyes and Skin", "Poison by Inhalation", "Blood Toxin, avoid Skin Contact".)
4. A signal word...Danger or Warning.

If only a numerical system is used on the original label, that information can be used on the new label provided all of those using the chemical understand how to interpret the system.

WHY IS THIS INFORMATION IMPORTANT

Working with a hazardous chemical and being exposed to a hazardous chemical are two different things. Knowing the hazardous properties of chemical will help you determine how to work with a chemical safely, how to recognize a chemical exposure, and how to respond to an emergency. The University's Hazard Communication Program provides the information that you and your supervisor will need to make decision about the chemicals in your workplace. This information will be available to you at all times through container labels and the University's MSDS Database.