**ENVIRONMENTAL HEALTH AND SAFETY**
**STANDARD OPERATING PROCEDURES**

**SOP No. 24.01.01.W1.02AR Hazard Communications Program**
Approved: August 15, 2010
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**Supplements** TAMUS Regulation 24.01.01

Environmental Health and Safety at WTAMU is composed of two distinct but integrated environmental safety departments that report to the Vice President of Research and Compliance. Academic and Research Environmental Health and Safety (AR-EHS) is responsible for research and academic related compliance, which includes laboratory and academic research and the associated compliance committees. Fire and Life Safety (FLS-EHS) is responsible for fire related compliance and conducts fire and life safety inspections of campus buildings and assists with the testing all fire detection and suppression systems.

## Contents

## 1. Purpose

The purpose of this written program is to advise and provide guidance on the employer/employee requirements of the Hazard Communication Standard (29 CFR 1910.1200), the Texas Hazard Communication Act, and the Texas A & M System Policy 24.01.01.

The requirements of the program are to:

- Provide information on workplace chemical hazards;
- Provide employees and students with ready access to training in the use of Safety Data Sheets for safety information;
- Establish a campus recommended standard for container labels and markings; and
- Provide training to meet the requirements of Texas A & M System Policy 24.01.01.

## 2. Scope

The West Texas A & M University System (WTAMU) Hazard Communication Program assigns responsibilities and describes procedures for providing information regarding hazardous chemicals to persons who may be exposed to hazardous chemicals during normal employment activities, during emergency situations, or as a result of proximity to the use of those chemicals. All university employees are required to complete hazard communication training. (Appendix A)

## 3. Responsibilities

3.1 WTAMU AR-EHS is responsible for:

- Identifying potentially hazardous conditions.
- Developing clear written instructions and guidelines to foster safe work environments and maintain compliance.
- Monitoring performance and compliance.
- Providing timely and effective training.
- Assisting and advising departments in implementing safe work environments.
- Maintaining records of safety training.
- Administering the HazCom Program for WTAMU departments.
- Monitoring compliance with the HazCom Program.
- Serving as liaison and provide reports to Texas Department of Health (TDH), the Local Emergency Planning Committee, and local fire departments, as required.

3.2 Departments are responsible for:

- Establishing and maintaining a culture of safety within the department.
- Responding to safety audits.

- Overseeing departmental compliance with applicable rules and regulations.
- Complying with the HazCom Program.
- Developing workplace-specific written procedures to implement the HazCom Program.
- Providing the necessary labeling information and, if needed, labels required to comply with the WTAMU Hazardous Materials Handling, Segregation, and Labeling Procedure 24.01.01.W1.03AR.

3.3 Supervisors are responsible for:

- Identifying employees affected by a specific, written program.
- Providing training and information regarding the program.
- Forwarding a copy of the record for any completed safety training to EHS.
- Monitoring and ensuring compliance with applicable programs and procedures.
- Making sure that Safety Data Sheets (SDS) are obtained and placed in the SDS books.
- Complying with the workplace-specific HazCom procedures and the WTAMU HazCom Program.

3.4 Employees, visitors and students are responsible for:

- Complying with the workplace-specific HazCom procedures and the WTAMU HazCom Program.
- Attending trainings provided by their supervisor or EHS.
- Labeling all designated chemicals used or stored in the workplace.
- Informing supervisor of any chemical that does not have a SDS in the book or has an outdated SDS.
- Carrying out all required procedures as outlined in the trainings provided.

## 4. Scope and Application

This program applies to all work operations at WTAMU where personnel may be exposed to hazardous substances under normal working conditions or during an emergency situation. Copies of the program and regulation may be obtained from EHS. A copy of this program must be available in each department.

Under this program, employees will be informed of the contents of the Hazard Communication Standard, the hazardous properties of chemicals with which they work, safe handling procedures, and measures to take to protect themselves and others from these chemicals. Faculty, staff, and students will also be informed of the hazards associated with non-routine tasks.

Students are not employees of the college; however, students who work with hazardous materials in university facilities also fall under the Hazard Communication Policy. Students will be trained in accordance with the Hazard Communication Program. This will be done for two reasons: 1) students need the protection provided and 2) students need a good understanding of their rights once they are in the work force.

Visitors and guests of the college may have access to the Hazard Communication Policy, as well as the safety data sheets upon request.

## 5. Program Description

The Hazard Communication Program includes the following elements:

5.1 Safe Work Procedures

Each department will be responsible for the specialized training required for the safe handling of chemicals in their area. These procedures must be developed for all hazardous chemicals or groups of chemicals in use.

5.2 Safety Data Sheets (SDS), formally known as Material Safety Data Sheets (MSDS)

The SDS is used to relay information about the chemical from the manufacturer or distributor to the user. Information such as flammability, known hazards, personal protective equipment (PPE), and spill clean-up requirements are found on the SDS.

The supervisor of each work area will ensure that the work site has current MSDS's/SDS's for hazardous materials in that area.

A SDS must be available to you ***before*** you work with any material that can impair your health.

The users are responsible for keeping a current SDS on file. He or she will contact EHS if an SDS is not obtainable.

It is the responsibility of each employee to read the SDS for each chemical before he or she uses the chemical(s). The employee must obey the cautions listed on the SDS and utilize the personal protective equipment (PPE) required to handle that chemical safely.

A copy of all SDSs shall be kept in the G Drive master SDS folder.

The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDSs) (formerly known as Material Safety Data Sheets or MSDSs) to communicate the hazards of hazardous chemical products. As of June 1, 2015, the HCS will require new

SDSs to be in a uniform format, and include the section numbers, the headings, and associated information under the headings below:

**Section 1, Identification** includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

**Section 2, Hazard(s) identification** includes all hazards regarding the chemical; required label elements.

**Section 3, Composition/information on ingredients** includes information on chemical ingredients; trade secret claims.

**Section 4, First-aid measures** includes important symptoms/ effects, acute, delayed; required treatment.

**Section 5, Fire-fighting measures** lists suitable extinguishing techniques, equipment; chemical hazards from fire.

**Section 6, Accidental release measures** lists emergency procedures; protective equipment; proper methods of containment and cleanup.

**Section 7, Handling and storage** lists precautions for safe handling and storage, including incompatibilities.

**Section 8, Exposure controls/personal protection** lists OSHA's Permissible Exposure Limits (PELs); ACGIH Threshold Limit Values (TLVs); and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the SDS where available as well as appropriate engineering controls; personal protective equipment (PPE).

**Section 9, Physical and chemical properties** lists the chemical's characteristics.

**Section 10, Stability and reactivity** lists chemical stability and possibility of hazardous reactions.

**Section 11, Toxicological information** includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

Section 12, Ecological information*

Section 13, Disposal considerations*

Section 14, Transport information*

Section 15, Regulatory information*

**Section 16, Other information,** includes the date of preparation or last revision.

***NOTE:*** *In classroom situations, students may be exposed to hazardous chemicals and therefore must also wear appropriate PPE. The instructor can order the PPE supplies*

*through the WTAMU bookstore the same way that a textbook would be ordered. Supplies may include items such as goggles, dust masks, gloves, and aprons.*

10. Special precautions.

*This section includes distinctive needs of various chemicals, i.e., store in cool, dry location, or store away from sunlight, or precautions must be taken not to cause sudden shock to the chemical.*

11. Name, address, and phone number of party responsible for writing the SDS.

12. Chemical disposal.

*The chemical manufacturer provides general waste handling and disposal information but it is not usually adequate information. For all chemical waste disposal issues, call AR-EHS.*

PLEASE DO NOT WRITE ON THE ORIGINAL SDS.

## 5.3 Labels and Other Forms of Warning

The user will ensure that all hazardous chemicals in the department are properly labeled. Labels must comply with the WTAMU Hazardous Material Labeling, Handling, and Segregation Procedure 24.01.01.W1.03AR. Manufacturers and vendors are legally responsible for providing label and SDS information. Contact AR-EHS if there are any questions or problems about obtaining SDS information.

If you transfer chemicals from a labeled container to a portable container (secondary container) that is intended only for ***immediate*** use in your work area, no labels are required on the secondary container; a temporary label (such as labeling tape or a label on a string) is suggested. However, the secondary container must be labeled if it is left unattended for any length of time, or if the person who poured the material leaves the immediate area where the secondary container resides the secondary container must be labeled. Storage of a chemical requires a container label complying with WTAMU Hazardous Material Labeling, Handling, and Segregation Procedure 24.01.01.W1.03AR.

**NOTE:** It is advised that a label be prepared stating specifically what chemicals are being used in the work area and placed in a conspicuous spot on the work surface. This label is to contain, for each chemical being used, the information required on a WTAMU hazard-warning label. Refer to AR-EHS for help if there are any questions.

## 5.4 Non-Routine Tasks

When you are required to perform a hazardous non-routine task, special training will be conducted to inform you of the hazardous chemicals to which you might be exposed. The supervisor or appropriate faculty will explain the proper precautions you must use to reduce or avoid exposure. Contact AR-EHS for more information regarding training for non-routine tasks.

5.5 Training

Everyone who works with, or is potentially exposed to, hazardous chemicals must receive initial training on the safe use of hazardous materials. This training is provided by the supervisor or supervisor's designee and is in addition to the general hazard communication training required by all employees.

Whenever a new hazard is introduced, additional training must be provided for that chemical.

Staff supervisors and appropriate faculty must supply training to their subordinates regarding specific hazards and the appropriate protective measures. They must be able to answer any questions and will provide regular monitoring to insure safe work practices.

Faculty shall be considered the professionals in the use of chemicals. The faculty shall receive the basic training of this Hazard Communication Policy.

It is expected that faculty will keep up to date with the chemical use within their own field.

Training will emphasize these items.

- Summary of the procedure in question and this written program.
- Chemical and physical properties of hazardous materials and methods that can be used to detect the presence or release of chemicals.
- Physical hazards of chemicals (e.g., potential for fire, explosion, etc.).
- Health hazards, including signs and symptoms of illness associated with exposure to chemicals.
- Medical condition(s) aggravated by exposure to the chemical.
- Hazard reduction or elimination methods.
- Emergency procedures.
- Location of SDS and how to interpret the information.
- How to interpret WTAMU Hazardous Materials Label information.
- Sources of additional information.

All related training will be documented with employee name, ID card number, and date. Documentation must be kept on file in EHS for review by regulatory authorities. If requested by the supervisor or faculty, EHS will obtain and coordinate training sessions.

Outlines containing the recommended WTAMU training curriculum for faculty and staff are detailed in Section 8 of this document. Training for students and visitors is included in Section 8.2 of this document. West Texas A & M University Environmental Health and Safety will follow the Texas A & M University System Policy 33.05.02 Required Employee Training.

Staff and faculty whose required training is delinquent more than 90 days will have their access to the internet terminated until all trainings are completed. Only Blackboard and Single Sign-on will be accessible. Internet access will be restored once training has been completed.

Student workers whose required training is delinquent more than 90 days will need to be terminated by their manager through Student Employment.

Contact AR-EHS for more information on training.

## 6. Governing Documents

- Texas A&M System Policy 24.01
- Texas A&M System Policy 24.01.01
- Texas Hazard Communication Act
- Public Employer Community Right-to-Know Act
- Texas Department of Health
- Texas Administrative Code, Title 25, Chapter 295
- Code of Federal Regulation, Title 29, Section 1910.1200
- Food and Drug Act
- Federal Alcohol Administration Act
- Federal Insecticide, Fungicide, and Rodenticide Act
- Federal Resource Conservation and Recovery Act

## 7. Definitions

***Acute:*** An adverse effect on the human body with symptoms of high severity coming quickly to a crisis.

***Asphyxiant:*** A gas or vapor, which can take up space in the air and reduce the concentration of oxygen available in the body. Examples include acetylene, methane, and carbon dioxide. Asphyxiants are of special concern in confined spaces.

***Boiling Point:*** Temperature at which a liquid changes to a vapor state at a given pressure (usually sea level pressure = 760 mmHg). Mixtures may have a boiling range. Flammable materials with low boiling points usually present special fire hazards.

***"C" or Ceiling:*** The maximum allowable human exposure limit for an airborne substance; not to be exceeded even momentarily. Examples: hydrogen chloride, chlorine, nitrogen dioxide, and some isocyanates have ceiling standards.

***Carcinogen:*** A substance that causes cancer.

***CC:*** Cubic centimeter: a volume measurement in the metric system, equal in capacity to one milliliter (ml).

***Ceiling Limit:*** The maximum amount of a toxic substance allowed in workroom air at any time during the day.

***Chronic Effect:*** An adverse effect on a human or animal body with symptoms that develop slowly or over a long period of time or which recur frequently. The harmful effects resulting from asbestos and silica are considered "chronic effects."

***Chronic Toxicity:*** Adverse (chronic) effects resulting from repeated doses of or exposures to a substance over a relatively prolonged period of time. Ordinarily used to denote effects in experimental animals.

***Combustible Liquid:*** Any liquid having a flash point at or above 100°F (37.8°C), but below 200°F (93.3°C), except any mixture having components with flash points of 200°F (93.3°C) or higher, the total volume of which make up 99 per cent or more of the total volume of the mixture.

***Common Name:*** Any designation or identification such as code name, code number, trade name, brand name, or generic name used to identify a chemical other than by its chemical name.

***Corrosive:*** A liquid or solid that causes visible destruction in skin tissue at the site of contact.

***Cutaneous Hazard:*** Chemicals that affect the dermal (skin) layer of the body. Signs and symptoms are defatting of the skin, rashes, and irritation.

***Decomposition:*** Breakdown of a material or substance (by heat, chemical reaction, electrolysis, decay, or other processes) into simpler compounds.

***Decomposition Products:*** Describes the hazardous materials produced during heated operations.

***Density:*** The mass of a substance per unit volume. The density of a substance is usually compared to water, which has a density of 1. Substances which float on water have densities less than 1; substances which sink have densities greater than 1.

***Dermal:*** Used on or applied to the skin.

***Dermal Toxicity:*** Adverse effects resulting from skin exposure to a substance. Ordinarily said to denote effects in experimental animals.

***Dermatitis:*** Inflammation of the skin.

***EPA:*** Environmental Protection Agency.

***AR-EHS:*** Academic and Research Environmental Health and Safety.

***Evaporation Rate:*** The rate at which a product will vaporize when compared to the rate of vaporization of a known material (usually Butyl Acetate with rate designated as 1.0). Evaporation rate can be useful in evaluation of health and fire hazards of a material. Rates are classified as fast (greater than 3.0), medium (0.8 to 3.0), and slow (less than 0.9). Evaporation rate of water is 0.3.

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

***Explosive Limits:*** The lowest concentration of a combustible or flammable gas or vapor in air that will produce a flash of fire. Mixtures below this concentration are too "lean" to burn.

***Exposure:*** A person's contact with a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin contact, or absorption, etc.).

***Extinguishing Media:*** Specifies the fire-fighting agents that should be used to extinguish fires.

***FL-EHS:*** Fire and Life Environmental Health and Safety

***Flammable:*** Flammable limits describe the range of concentrations of a flammable gas or vapor in air that will produce a flash of fire in the presence of an ignition source. A "flammable liquid" is a solution with a flash point below 100°F (37.8°C).

***Flash Point:*** The temperature at which a liquid will give off enough flammable vapor to ignite. The lower the flash point, the more dangerous the product. A "flammable liquid" is a solution with a flash point below 100°F (37.8°C). Flash point values are most important when dealing with hydrocarbon solvents. The flash point of a material may vary depending on the method used, so the test method is indicated when the flash point is given.

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

***Hazardous Material:*** In a broad sense, any substance or mixture of substances having properties capable of producing adverse effects on the health or safety of a human being. Sometimes people think of "chemicals" as being only liquids in containers. The Hazardous Communication Standard covers chemicals in all physical forms - liquids, solids, gases, vapors, fumes, and mists - whether they are "contained" or not. The hazardous nature of the chemical and the potential for exposure are the factors that determine whether a chemical is covered. If it is hazardous and there is potential for exposure, the rule applies. So it covers many items, e.g. floor cleaners, fuels, welding rods (toxic fumes), paints, and adhesives (poisons) to compressed gases and concentrated acids.

***Hazard Ratings:*** Material ratings of one to four that indicate the severity of hazard with respect to health, flammability, and reactivity.

***Hazard Warning:*** Any words, picture, symbols, or combination thereof appearing on a label or other appropriate form of warning which conveys the hazards of the chemical(s) in the container(s).

***Health Hazard:*** A chemical for which there is statistically significant evidence, based on at least one study conducted in accordance with established scientific principles, that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes.

***Hepatotoxins***: Chemicals that produce liver damage.

***HRI:*** NFPA's Hazard Rating Index: Chemicals properties in flammability, health risk, and reactivity are rated on a scale of 0 to 4.

***HVAC:*** Heating, ventilation, and air conditioning.

***Ignitible:*** Capable of being set on fire.

***Incompatible:*** Materials that could cause dangerous reactions from direct contact with one another. These types of chemicals should never be stored together.

***Ingestion:*** The taking in of a substance through the mouth.

***Inhalation:*** The breathing in of a substance in the form of a gas, vapor, fume, mist, or dust.

***Irritant:*** A substance that, by contact in sufficient concentration for a sufficient period of time, will cause an inflammatory response or reaction of the eye, skin, or respiratory system. The contact may be a single exposure or multiple exposures.

***Lethal Concentration (LC):*** A concentration of a substance being tested that will kill a test animal.

***Lethal Concentration 50 (LC50):*** The concentration of a material in air which on the basis of laboratory tests is expected to kill 50 per cent of a group of test animals when administered as a single exposure (usually 1 to 4 hours).

***Lethal Dose (LD):*** A concentration of a substance being tested that will kill a test animal.

***Lethal Dose 50 (LD50):*** A single dose of chemical that, on the basis of laboratory tests, is expected to kill 50 per cent of a group of test animals. The LD50 dose is usually expressed as milligrams or grams of chemical per kilogram of animal body weight (mg/kg or g/kg).

***Melting Point:*** The temperature at which a solid substance changes to a liquid state. For mixtures, the melting range may be given.

***Mixture:*** Any combination or two or more chemicals if the combination is not in whole or in part the result of a chemical reaction.

***Mutagen:*** Any substance able to induce mutations in DNA and living cells.

***Narcosis:*** Stupor or unconsciousness produced by a chemical.

***Nephrotoxins:*** Chemicals that produce kidney damage.

***Neurotoxins:*** Chemicals that produce their primary toxic effects on the nervous system.

***NFPA:*** National Fire Protection Agency.

***Occupational Exposure Limits:*** Maximum allowable concentrations of toxic substances in workroom air to protect workers who are exposed to toxic substances over a working lifetime.

***Oral Toxicity:*** Adverse effects resulting from taking a substance into the body via the mouth. Ordinarily used to denote effects in experimental animals.

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

***Permissible Exposure Limits (PEL's):*** PEL's are OSHA's legal exposure limits.

***pH***: A number that describes the acidity or alkalinity of an aqueous solution.

***Physical Hazard:*** A chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water-reactive.

***Polymerization:*** A chemical reaction in which one or more small molecules combine to form larger molecules at a rate which releases large amounts of energy. If hazardous polymerization can occur with a given material, the SDS usually will list conditions which could start the reaction; and since the material in most cases contains a polymerization inhibitor, it is usually used up and no longer capable of preventing a reaction.

***PPM (Parts Per Million):*** Parts of vapor or gas per million parts of contaminated air by volume.

***PPB (Parts Per Billion):*** Parts of vapor or gas per billion parts of contaminated air by volume.

***PPE:*** Personal Protective Equipment.

***Reactivity:*** A description of the tendency of a substance to undergo chemical reaction with the release of energy. Undesirable effects, such as pressure build-up, temperature increase, formation of noxious, toxic, or corrosive byproducts, may occur because of the reactivity of a substance by heating, burning, direct contact with other materials, or other conditions in use or in storage.

***Sensitizer:*** A substance which on first exposure causes little or no reaction but which on repeated exposure may cause a marked response, not necessarily limited to the contact site. Skin sensitization is the most common form of sensitization in the industrial setting, although respiratory sensitization to a few chemicals is also known to occur.

***Shipping Information:*** The appropriate name(s), hazard class(es), and identification number(s) as determined by the United States Department of Transportation, International Regulations, and the International Civil Aviation Organization.

***Solubility:*** The extent to which a substance mixes with a liquid to produce a solution.

***Solvent:*** Usually a liquid in which other substances are dissolved. The most common solvent is water.

***Specific Gravity:*** The ratio of the weight of a given volume of any substance to the weight of an equal volume of water.

***Stability:*** An expression of the ability of a material to remain unchanged under expected and reasonable conditions of storage and use.

***STEL:*** Short-Term Exposure Limit

***Teratogen:*** Any substance that causes growth abnormalities in embryos, genetic modifications in cells, etc.

***Threshold Limit Values (TLV's):*** Expresses the airborne concentration of a material to which nearly all persons can be exposed day after day without adverse effects. TLV's are expressed three ways:

1. TLV-TWA: The allowable Time Weighted Average concentration for a normal 8-hour workday (40-hour work week).

2. TLV-STEL: The short-term exposure limit or maximum concentration for a continuous 15-minute exposure period (maximum of four such periods per day, with at least 60 minutes between exposure periods) and provided the TLV-TWA is not exceeded.

3. TLV-C: The ceiling exposure limit is the concentration that should never be exceeded, even instantaneously.

***Toxicity:*** The sum of adverse effects resulting from exposure to a material, generally by the mouth, skin, or respiratory tract.

***TWA*** (Time Weighted Average exposure): The airborne concentration of a material to which a person is exposed, averaged the total exposure time; generally the total workday (8 to 12 hours).

***Vapor Density:*** The density of a material's vapor, compared to the density of the air. If a vapor density is greater than one, it is denser than air, and it will drop to the floor or the lowest point available. If the density is less than one, it is lighter than air and will float upwards like helium.

***Vapor Pressure:*** The pressure exerted at a given temperature of a vapor in equilibrium with its liquid or solid. The higher the vapor pressure, the more easily a liquid will evaporate. Liquid materials that evaporate easily are termed volatile, and this means that air concentrations can build up quickly when working with the material in liquid form. Materials with high vapor pressures may be particularly hazardous if you are working in enclosed or confined areas, or if the air circulation is poor. Note: Materials with lower vapor pressure still may pose an inhalation hazard.

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

## 8. Training

All university employees are required to complete hazard communication training. The training is available on TrainTraq. The training addresses general laboratory safety as well as the topics required under the applicable hazard communication laws, regulations, and policies. General topics addressed in that training are outlined in the following sections 8.1-8.1.9. West Texas A & M University Environmental Health and Safety will follow the Texas A & M University System Policy 33.05.02 Required Employee Training.

Staff and faculty whose required training is delinquent more than 90 days will have their access to the Internet terminated until all trainings are completed. Only Blackboard and Single Sign-on will be accessible. Internet access will be restored once training has been completed.

Student workers whose required training is delinquent more than 90 days will need to be terminated by their manager through Student Employment.

## 8.1 Faculty and Staff Training Overview

Objectives

1. For employee associated with a research or teaching laboratory, or biologist engaged in field work to understand the importance of hazard communication.

Being a professor and an instructor in a specialized field, you are looked up to by your students as an expert. You set an example for professionalism to your students that they will use once they graduate. Your students also expect you to know everything there is to know about the chemicals used in your field of study. They will want to know about health and environmental considerations, how to use this chemical safely, and how this chemical does its job.

Sounds like a lot of questions and work. It is. Being an expert and having to teach about a profession is more than anyone could ask for. However you are training students to work with those chemicals after they graduate; what skills you give them in the classroom will help protect them afterwards. Remember that these students rely on your teaching skills and how prepared they are for a job reflects on you.

### 8.1.1 What is a Hazardous Material?

Objective

1. To be able to identify and define hazardous materials.

The Occupational Safety and Health Administration defines a hazardous material as: "any chemical which is a physical hazard or a health hazard." (29 CFR 1910.1200 (c))

WTAMU will consider any chemical that has a health warning or caution on the label or SDS to be a hazardous chemical. Any chemical that a reasonable individual believes has the potential to cause harm or injury shall be considered to be a hazardous material and will be used and controlled as such.

### 8.1.2 Labeling

Objective

- To be able to transfer information from the manufacturer's label or a Safety Data Sheet onto another container.
- To be able to transfer certain information from a container label onto a temporary container for classroom use.

- To be able to use the WTAMU Hazardous Materials Labeling Procedure 24.01.01.W1.03AR
- 2. NFPA Hazard Rating Index
- Hazardous Materials Label per WTAMU 24.01.01.W1.03AR Hazardous Materials Labeling Procedure

Many chemicals have the same physical characteristics. Substances may have several similar characteristics; color, taste, and smell may be the same. For example: acid and water are both clear liquids, only the smell of the two can tell them apart. What if someone had a head cold and couldn't tell the difference? That is one reason why we label chemicals.

The best type of label is the WTAMU Hazardous Material Label. These labels include the following information:

(a) Name - As it appears on the SDS. (NO abbreviations or chemical formulas.)
(b) Health - In the blue section of the label; numerically, 0 to 4.
(c) Flammability - In the red section of the label; numerically, 0 to 4.
(d) Reactivity - In the yellow section of the label; numerically, 0 to 4.
(e) Special Information - Additional codes to cover other possible hazards of the material.
(f) Compatibility Code - An alphabetical character code, A through F that identifies the storage compatibility class of the substance. See appendix B. (Applies to storage of unused or partial lots of a given substance and not to waste handling procedures.)

The manufacturer's label also *should include* all the important information we need: the identity, address and possibly the phone number of the manufacturer, the chemical's trade name, appropriate hazard warnings, and possible first aid procedures for an accident.

<u>The best container for storing a chemical is the one that it was shipped in.</u>

If you have to transfer a substance or a chemical to another container try to label the new container with a WTAMU Hazardous Material Label. Reference the WTAMU Hazardous Materials Labeling Procedure 24.01.01.W1.03AR for specific instructions on how to make or obtain these labels. If it is not practical to label the container with a WTAMU label then be sure to copy all the information needed from the original label or the SDS. The information to be copied is:

(a) Name - As it appears on the SDS. (NO abbreviations or chemical formulas.)
(b) Health - In the blue section of the label; numerically, 0 to 4.
(c) Flammability - In the red section of the label; numerically, 0 to 4.
(d) Reactivity - In the yellow section of the label; numerically, 0 to 4.
(e) Special Information - Additional codes to cover other possible hazards of the material.
(f) Compatibility Code - An alphabetical character code, A through F that identifies the storage compatibility class of the substance. See appendix B. (Applies to storage of unused or partial lots of a given substance and not to waste handling procedures.)

**All this information must be on the label.**

For classroom or laboratory instruction, you should also label the temporary containers used for the day. This will prevent an accidental mix-up or mistaken identity accident and it will help the students understand and visualize the demonstration better. For this type of labeling, a sharpie marker or Post-It note will serve but is recommended that a WTAMU Hazardous Material Label be printed and taped to the container.

If a label should fade of begin to fall off, you must replace it immediately. If you should find a bottle or container without a label DO NOT TOUCH OR MOVE the container; put a note on the container stating where it was found, when it was found and a warning stating: "DO NOT USE!! IDENTITY UNKNOWN". Then contact AR-EHS.

> **Remember:** If you have any doubts about the identity of a chemical, then treat it as if it was unknown.

### 8.1.3 Safety Data Sheets (SDS), formally known as Material Safety Data Sheets (MSDS)

Objectives

1. To be able to correctly identify particular hazards of a chemical using a SDS.

2. To be able to communicate those chemicals hazards to students.

3. To be able to communicate proper precautions in order to avoid accidents.

The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide SDSs to communicate the hazards of hazardous chemical products. As of June 1, 2015, HCS requires new SDSs to be in a uniform format, and include the section numbers, the headings, and associated information under the headings below:

**Section 1, Identification** includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

**Section 2, Hazard(s) identification** includes all hazards regarding the chemical; required label elements.

**Section 3, Composition/information on ingredients** includes information on chemical ingredients; trade secret claims.

**Section 4, First-aid measures** includes important symptoms/ effects, acute, delayed; required treatment.

**Section 5, Fire-fighting measures** lists suitable extinguishing techniques, equipment; chemical hazards from fire.

**Section 6, Accidental release measures** lists emergency procedures; protective equipment; proper methods of containment and cleanup.

**Section 7, Handling and storage** lists precautions for safe handling and storage, including incompatibilities.

**Section 8, Exposure controls/personal protection** lists OSHA's Permissible Exposure Limits (PELs); ACGIH Threshold Limit Values (TLVs); and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the SDS where available as well as appropriate engineering controls; personal protective equipment (PPE).

**Section 9, Physical and chemical properties** lists the chemical's characteristics.

**Section 10, Stability and reactivity** lists chemical stability and possibility of hazardous reactions.

**Section 11, Toxicological information** includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

Section 12, Ecological information*

Section 13, Disposal considerations*

Section 14, Transport information*

Section 15, Regulatory information*

**Section 16, Other information,** includes the date of preparation or last revision.

8.1.4 Personal Protective Equipment Objective

1. To be able to use a SDS to determine what PPE will be needed for a class or for research, including:

- Impact glasses
- Chemical splash goggles
- Rubber and vinyl gloves
- Chemical smocks or aprons
- Respirator

There are many different types of personal protective equipment within the industries. There are many different types of hearing protection. There are half-mask respirators to self-contained breathing apparatus to protect the lungs from vapors and gasses. There are chemical suits to protect the entire body from

exposure to hazardous chemicals. Basically, there is a piece of protective equipment to protect any exposure to any organ on the human body.

The main types of PPE that we will talk about are for eye and skin protection. If there is need for a respirator, then consult AR-EHS.

**Eye Protection**

There are two main types of eye protection: impact glasses and chemical splash goggles. Impact glasses are glasses with impact-resistant lenses and possibly side-shields. These glasses are meant to protect the eyes from a direct hit from an object. Chemical splash goggles better protect the eyes by forming a seal around the eyes, like a diver's mask to protect from heavy fumes and splash. The best way to determine which is needed is to look on the SDS for suggested PPE.

**Skin Protection**

Gloves and aprons are used to protect the skin and clothing of the chemical user. Many chemicals may not pose a serious health hazard but may irritate the skin. Gloves and aprons help prevent the chemical from contacting the skin.

Aprons also protect the clothing being worn. Even though a student or worker may not care what happens to their clothes, the chemicals may soak into the fibers and have a prolonged contact with the skin causing irritation or corrosion of the skin.

To determine the level and type of protective clothing, refer to the SDS.

8.1.5 Storage of Hazardous Materials Objectives

1. To be able to use a WTAMU Hazardous Materials Label *or* SDS to determine the incompatibility between two chemicals.

2. To be able to use a WTAMU Hazardous Materials Label *or* SDS to determine storage procedures for a chemical.

Storage of hazardous materials is a very important project. If you were to store a pyrophoric substance near an oxygen cylinder, you could have an explosion on your hands.

To determine if chemicals can be stored together check the reactivity and compatibility sections on both the WTAMU Hazardous Materials Label and SDS.

8.1.6 Reduction of Hazardous Materials Objective

1. To be able to reduce the more hazardous materials used in the classroom by finding alternative, less hazardous materials or using micro-scale techniques.

We are heading into an age in which we are discovering that many of the chemicals that we once used every day to make our work easier may be dangerous to our health and to the environment. Many of the dangerous chemicals in the workplace are now being replaced by safer chemical and /or different processes.

One good example of this is the use of ordinary laundry detergent in the place of carbon tetra chloride or 1,1,1 trichloroethane. The two carbon based chemicals have great solvent properties for removing oil and grease; however carbon tetrachloride was found to cause cancer. 1,1,1 trichloroethane works almost as well but the cost to properly dispose of this chemical has been rising over the last few years.

When possible, WTAMU will use micro-scale experiments to reduce the overall amounts of the chemicals used to a more easily manageable (and safer in the event of an accident) quantity.

8.1.7 Hazardous Wastes Objectives

- To understand what disposal of hazardous waste means.
- To state the correct measures in disposing the hazardous waste created in the classroom or lab.
- Spill response and follow up actions.
- Proper waste disposal.

NOTE: Disposing of hazardous waste does not mean dumping the waste down the drain or throwing the waste back into the original container.

NOTE: Waste should go into a specific container labeled with a WTAMU Hazardous Waste Label that lists **all** of chemicals that make up the hazardous waste.

DO NOT MIX DIFFERENT TYPES OF HAZARDOUS WASTE. EACH NEW WASTE NEEDS A NEW CONTAINER. Refer to the WTAMU Hazardous Waste Label or the SDS of the chemical(s) in question to determine their compatibility issues.

Refer to the WTAMU Drain Disposal Procedure 24.01.01.W1.06AR for information on what can and cannot be washed down drains.

Save all hazardous waste for AR-EHS to come and pick-up.

Be sure to contact AR-EHS immediately for pick-up of any unwanted chemical.

8.1.8 Faculty and Staff Retraining

Employees will be required to take the TrainTraq 2111163 Hazard Communication and Laboratory Safety Training every two (2) years.

8.1.9 Faculty and Staff Training Records Retention

No official state records may be destroyed without permission from the Texas State Library as outlined in Texas Government Code, Section 441.187 and 13 Texas Administrative Code, Title 13, Part 1, Chapter 6, Subchapter A, Rule 6.7. The Texas State Library certifies Agency retention schedules as a means of granting permission to destroy official state records.

West Texas A & M University Records Retention Schedule is certified by the Texas State Library and Archives Commission. West Texas A & M University Environmental Health and Safety will follow Texas A & M University Records Retention Schedule as stated in the Standard Operating Procedure 61.99.01.W0.01 Records Management. All official state records (paper, microform, electronic, or any other media) must be retained for the minimum period designated.

8.2 Student Training

Working with the academic departments, AR-EHS has compiled a list of WTAMU courses, laboratories, studios, and other student activities in which the students could be exposed to hazardous chemicals. To participate in the course and associated laboratory, or in-class activities, the student is required to complete online "Student Laboratory Safety Training" that is assigned to the student on WT Class upon registration of a course, laboratory, studio, or other student activity. Upon registration of a course, laboratory, studio, or other student activity, the student agrees to complete the assigned training by no later than the 12th class day and they acknowledge that they will not be allowed to participate in the laboratory/course activities after the 18th class day if the training has not been completed (Note: Due to the compressed summer course schedules the requirement is to complete the required training by the 5th class day and students not completing the training will not be allowed to participate in the laboratory/course activities after the 10th class day.) Note: the PI/Instructor of Record or lab manager can impose a deadline before the stated deadlines, per class, as needed. It is the responsibility of the PI/Instructor of Record to make certain that all students have completed the "Student Laboratory Safety Training". AR-EHS supports the student laboratory training process through the verification process described below.

Student completion is verified on the 1st class day of the semester, and a list of students with outstanding training are compiled and sent to the instructor/staff of record each class day by AR-EHS. On the 5th class day, the instructor and associated department head are contacted by AR-EHS to determine the reason for student's outstanding status (i.e. dropped class, not attending class, has not taken test). At this time (5th class day), AR-EHS provides a list of students with outstanding training to Advising Services in order to reach students through the early alert program.. On the 13th class day AR-EHS will notify the associated Dean of any remaining students with outstanding training. On the 24th day, a final report of students with outstanding training is provided to the Provost's Office for final action as determined by the Provost or Associate Provost.

There is no OSHA law governing hazard communication for students; however, it is the intention of this program to give students the extra protection and extra education needed to compete in the workforce after graduation. Every student graduating from WTAMU must have a safe, working

knowledge of the chemicals used in their fields of study and a good understanding of their rights in the workplace. An overview of topics covered in the training are as follows:

8.2.1 Student Responsibilities Objective

1. To ensure that students can correctly state the purpose of the hazard communication program and state their role in the program.

The student has one major responsibility at college; that is to learn. Students must learn what chemicals to use in certain processes, how to safely handle those chemicals, and what steps to take in case of a spill.

8.2.2 Hazardous Materials That Will Be Used in the Classroom Objective

1. To make the student aware that hazardous materials will be used during the course of the semester.

Students should to take the time to read the sSDS(s) before using the chemicals.

Safety Data Sheets and the WTAMU Hazardous Material Labeling Procedures

Objective

- To be able to read and understand the WTAMU Hazardous Material Labels.
- To be able to read and understand the hazards associated with a chemical using a safety data sheet.
- To know where to find the SDS in the classroom or lab.
- The components of the SDS.
- Safe handling of chemicals.
- Personal Protective Equipment
    - To teach students the different types of PPE.
    - To teach students how to determine what type of PPE is required by using a SDS.
    - Know various forms and levels of PPE.
    - Focus is on eye and skin protection.
        - Eye Protection:
            - There are two main types of eye protection. Impact glasses and chemical splash goggles. Impact glasses are glasses with impact-resistant lenses and possibly side-shields. These glasses are meant to protect the eyes from a direct hit from an object. Chemical splash goggles better protect the eyes by forming a seal around the eyes, like a diver's mask to protect from heavy fumes and splash. The best way to determine which is needed is to look on the MSDS for suggested PPE.

        - Skin Protection:
            - Gloves and aprons are used to protect the skin and clothing of the chemical user. Many chemicals may not pose a serious health hazard but may irritate the skin. Gloves and aprons help prevent the chemical from contacting the skin.
            - Aprons also protect the clothing being worn. Even though a student or worker may not care what happens to their clothes, the chemicals may soak into the fibers and have a prolonged contact with the skin causing irritation or corrosion of the skin.
            - To determine the level and type of protective clothing, refer to the SDS.
    - Hazardous Waste
        - To teach the student the correct way of disposing hazardous waste.
        - Disposing hazardous waste does not mean dumping the waste down the sink or throwing the waste back in the original container.
        - Unwanted or spent chemicals should go into a specific container labeled with the contents of the unwanted chemicals. Do not mix different types of hazardous materials in the. Each type of unwanted material should go into a different container. If there are any questions, ask the instructor. Contact AREHS to pick up unwanted material and perform a determination as to the appropriate handling of such material. A material may no longer be needed in one area but may be usable somewhere else on campus. AR-EHS will make ALL determinations of waste.

8.3 Specific Hazardous Substance Training

Objective

1. To identify and provide appropriate training and specific equipment for highly hazardous substances.

This section of the program deals with the specific training of the use of chemicals for a task that requires specialized training. Since there are many chemicals used for many different tasks, the faculty/staff should determine which chemicals are hazardous enough to warrant specific training. A rule of thumb for determination is if the chemical has instructions on the original container, like most cleaning agents and consumer goods, then you don't need specific training. If the chemical comes in a container without instructions on the label, then specific training is warranted.

The faculty/staff should give a mini-training session to include

- A review of the WTAMU Hazardous Material Label.
- A review of the SDS.
- What PPE (if needed) is recommended.
- What first aid and health concerns are related to the chemical.

- How to use the chemical safely.
- How to properly dispose of the chemical.

Before the training, the faculty/staff must make up a training report stating which chemical(s) were reviewed, the date, and who attended. EHS will provide support in training, identification of, and acquisition of appropriate PPE.

9. Record Retention

Objective

1. To establish and maintain a file for each employee regarding training, health status, and chemical exposure.

In order to track an employee's health and exposure, a record of what training an employee has had, as well as any exposure to hazardous chemicals, should be created. For the general hazard communication training the faculty/staff can have the entire group fill out a sign-out sheet, and a photocopy of the sheet will go into each file. For specific training the form must also state which chemicals were reviewed. Specific training for faculty and staff will be retained for 30 years post-employment.

Objective

2. To provide a written record of student training.

The purpose of student training is to make students more aware of the chemicals in use in the field of study that they have chosen. Hopefully this training will make the student a better and safer worker and manager. This will make the WTAMU students more desirable for hire and in turn make WTAMU a desired college. Remember, everything a student learns reflects on the instructor's knowledge and skill of teaching and will either enhance or dull the instructor's reputation. Student records are maintained in the student's WTClass file and archived for 1 year. Students are required to retake the Student Laboratory Safety Training once per academic a year. Student training records are maintained in the WTClass system.

No official state records may be destroyed without permission from the Texas State Library as outlined in Texas Government Code, Section 441.187 and 13 Texas Administrative Code, Title 13, Part 1, Chapter 6, Subchapter A, Rule 6.7. The Texas State Library certifies Agency retention schedules as a means of granting permission to destroy official state records.

West Texas A & M University Records Retention Schedule is certified by the Texas State Library and Archives Commission. West Texas A & M University Environmental Health and Safety will follow Texas A & M University Records Retention Schedule as stated in the Standard Operating Procedure 61.99.01.W0.01 Records Management. All official state records (paper, microform, electronic, or any other media) must be retained for the minimum period designated.

8.5 Conclusion

This program gives a basic overview of hazard communication. This does not mean that everything in this program is all that you should know. There is much more in the chemical industry to learn. Every day new chemicals are added to the market. Some are more dangerous than before, and some are designed to be safer and cheaper alternatives to other chemicals.

There is much to learn about safety and employee relations. Hopefully this program will give WTAMU a firm base to improve work relations and student relations. Hazard communication is just a small step in making the workplace and the university a safer and healthier place to work and learn.

If there are any questions that need specific answers, please talk to your supervisor or AR-EHS.

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**Related Statutes, Policies, or Requirements**

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**Contact Office**

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WTAMU Environmental Health and Safety
(806) 651-2270

# Appendix A

Job titles of WTAMU employees, who may be associated with a research or teaching laboratory, or biologist engaged in field work, is required to complete training.

Job Titles:

Professor
Associate Professor
Assistant Professor
Instructor
Graduate Assistant
Research Assistant
Teaching Assistant