



**BRIGHAM YOUNG UNIVERSITY – IDAHO**

**ENVIRONMENTAL, HEALTH & SAFETY**

**SAFETY DEPARTMENT**

**HAZARD COMMUNICATION  
PROGRAM**

**EH-005-R04**



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Brigham Young University-Idaho

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## **1.0 Overview**

BYU-Idaho is firmly committed to providing a safe and healthy work environment for each of its employees and students. It is recognized that some job-related procedures and other essential scholastic activities frequently require the use of chemicals which may have hazardous properties. When using these chemicals, it is important that employees and students are aware of the identity and hazardous properties of such chemicals, as well as what protective measures are available, since an informed person is more likely to be careful. Therefore, a written Hazard Communication Program has been prepared for BYU-Idaho.

## **2.0 Policy**

The University's written Hazard Communication Program establishes uniform requirements to assure that the hazards of all chemicals used on campus are evaluated, and that the resultant information is available to the employees.

## **3.0 Requirements**

The following are the requirements of the Hazard Communication Program, as established by OSHA in 29 CFR 1910.1200:

1. Develop, implement and maintain a written program.
2. Evaluate the chemicals and materials used in the facility.
3. Obtain or develop a Safety Data Sheet (SDS) for each hazardous chemical or material produced or imported.
4. Ensure that each container of hazardous chemical or material is labeled, tagged or marked to identify the contents, along with any applicable hazard warnings.
5. Provide employees with effective information and training on the hazardous chemicals in the work area. This training is to be well documented as to date, type and contents of the training, as well as the testing method of understanding.
6. The contents of the program must be readily available to any and all employees and visitors.

The program provides instructions for non-university employers (e.g., contractors) regarding the hazards their employees may be exposed to when working in or around certain areas on the BYU-Idaho campus.

## **4.0 Purpose**

The purpose of the Hazard Communication Program is to educate and inform BYU-Idaho employees of the chemical substances that may be encountered in their daily operations.

## **5.0 Scope**

This program is in compliance with OSHA regulations, 29 CFR 1910.1200 requiring the establishment of a Hazard Communication Program.

## **6.0 Procedures**

### **6.1 Access to the Written Program**

Access to this written Hazard Communication Program is available to employees, their designated representatives, the Assistant Secretary of Labor for Occupational Safety and Health (OSHA), and the Director of the National Institute for Occupational Safety and Health (NIOSH) through the BYU-Idaho Safety Department, or the Safety Department web page incorporated within the BYU-Idaho web site.

### **6.2 Hazard Determination Policy.**

- 6.2.1 Any chemical listed in 29 CFR 1910, Subpart Z, Toxic and Hazardous Chemicals; the Threshold Limit Values for Chemicals and Physical Agents in the Work Environment published by the American Conference of Governmental Industrial Hygienists (ACGIH), the Annual Report on Carcinogens published by the National Toxicology Program (NPT); or Monographs published by the International Agency for Research on Cancer (IARC) will be considered a health or physical hazard.
- 6.2.2 Any human epidemiological study, individual case report or animal toxicological testing which indicates that a material presents a health hazard, will be considered hazardous, provided that the study indicated an adverse health effect that is likely to occur, that the results are statistically significant, and that the study was conducted in accordance with scientific principles.
- 6.2.3 Every hazardous chemical present in a department or work area must be listed on the "Hazardous Chemicals Inventory".
- 6.2.4 The identity of the chemical appearing on the "Hazardous Chemicals Inventory" must be the same name that appears on the manufacturer's label, in-house label, and the SDS for that chemical.
- 6.2.5 The "Hazardous Chemicals inventory" shall be placed with the SDSs maintained for each department or work area and shall be accessible for inspection whenever workers are present.
- 6.2.6 The "Hazardous Chemicals Inventory" must be updated whenever necessary to accurately reflect all the hazardous chemicals that are present in the department or work area.

### **6.3 Labeling System.**

- 6.3.1 No hazardous chemicals will be accepted for use or used at BYU-Idaho or shipped to any other location unless labeled with at least the following information:
  - 6.3.1.1 Identity of the hazardous chemical(s).
  - 6.3.1.2 Appropriate hazard warnings.
  - 6.3.1.3 Name and address of the chemical manufacturer, importer, or distributor.
- 6.3.2 All labels must be legible, in English, and prominently displayed on the container.

- 6.3.3 If the hazardous chemical is regulated by OSHA in a chemical-specific health standard, the label used must be in accordance with the requirements of that standard.
- 6.3.4 In certain situations involving individual stationary process containers, the label may be replaced by a sign, placard, process sheet, batch ticket, or other means to convey the identity of the hazardous chemical and the appropriate hazard warnings. If these other forms of warning are used, they must be readily accessible to employees in their department or work area during each work shift.
- 6.3.5 The Federal Hazard Communication Standard does not require a label to be placed on portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer. However, by labeling the portable container appropriately you can help prevent the accidental misuse of the material by others.
- 6.3.6 Any portable container of hazardous chemicals not intended for immediate use must be labeled with the appropriate in-house label containing the proper information as indicated in 6.3.1.
- 6.3.7 Employees with questions concerning the appropriate in house label to use when transferring a hazardous material from one container to another container should contact the department or work area supervisor immediately.
- 6.3.8 In-house labels that are used by a department shall comply with the federal requirements to identify the material and give the appropriate hazard warnings.
- 6.3.9 All in-house labels must be reviewed whenever it is necessary to update the label information and to determine whether the label conveys the appropriate hazard warnings for the material identified on the label.
- 6.3.10 No label is to be defaced or removed unless the container is immediately marked with the required information. No employee should remove any label unless specifically directed to do so by the supervisor. Any container without a label should be reported immediately to the department or work area supervisor.
- 6.3.11 The identity of the material that appears on the manufacturer's labels or the in-house label must be the same name to identify the material on the "Hazardous Chemicals Inventory" and the SDS for the chemical.

## **7.0 Employee Responsibility**

The success of a written Hazard Communication Program, to a great extent, depends on the cooperation of every employee. Employees should be alert to the potential hazards of all the materials in their department or work area. They should consult the SDS's for specific information concerning hazardous chemicals with which they may work, and should follow appropriate work practices that have been established to protect their health and safety. Active employee participation in the Hazard Communication Program will result in the continuous reduction of chemical-related illnesses and injuries at BYU-Idaho.

## **8.0 Employee Information and Training Program**

8.1 All employees working with or potentially exposed to hazardous chemicals or non-routine tasks must be appropriately informed and trained concerning the potential hazards of the chemicals or non-routine tasks to which they may be exposed.

8.1.1 Employee information includes:

8.1.1.1 The requirements of the Federal Hazard Communication Standard.

8.1.1.2 Any operations in their department or work area where hazardous chemicals are present or non-routine tasks are performed.

8.1.1.3 The location and availability of the written hazard Communication Program for the department or work area, required list(s) of hazardous chemicals, and material safety data sheets (SDSs) for those hazardous chemicals.

8.1.2 Employee training includes:

8.1.2.1 Methods and observations that may be used to detect the presence or release of a hazardous chemical in the department or work area (as detected by monitoring conducted by the College, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.).

8.1.2.2 Information about the physical and health hazards of the chemicals in the department or work area.

8.1.2.3 The measures employees can take to protect themselves from these hazards, including specific procedures the college has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and use of personal protective equipment.

8.1.2.4 The details of the written Hazard Communication Program developed for the department or work area, including an explanation of the labeling system and the SDSs, and how employees can obtain and use this information.

8.2 The assigned safety and health professional, a representative, or an appointed supervisor is responsible for designing an employee information and training program for the department or work area. The training program should consist of pertinent instruction about general hazard communication topics.

8.3 All employees are required to go through the training program that has been designed for their department or work area. This is to be done in addition to the college's hazard communication instruction.

8.4 This training program must be given at the time of an employee's initial assignment to work with or around hazardous chemicals, or whenever a new hazard or non-routine task is introduced into the department or work area. Periodic updates and reinforcement may be conducted by informed supervisors and through safety meetings, when appropriate.

8.5 Before any non-routine task is performed that might involve exposure to hazardous chemicals, the health and safety professional, a representative and/or the employee's

supervisor must carefully review all potential hazards of the task with the employee, and must prescribe appropriate work practice procedures.

8.6 Employees must be informed of hazardous chemicals in unlabeled pipes and of the potential hazards involved in the event of exposure to these chemicals (e.g., maintenance work, system failure). The information provided must include SDSs and other specific information presented in the training program for employees. These SDSs must be readily available.

8.7 As part of the contractual arrangement between any outside contractor and the college, the contractor must list all hazardous chemicals that are to be used by the contractor's employees and insure that proper training concerning the potential hazards of the chemicals to which they may be exposed has been conducted. Furthermore, prior to beginning work on college property all contractors shall be advised of the written Hazard Communication Program for the area in which they may work. The particular hazards associated with the work area shall be identified. The SDSs for the hazardous chemicals located in the department or work area shall be available to the contractor, and the appropriate protective measures outlined therein shall be brought to the attention of the contractor.

## APPENDIX A

### Safety Data Sheets (SDS)

1. A safety data sheet (SDS) contains the information required by the Federal Hazard Communication Standard and must be kept for each chemical listed on the "Hazardous Chemicals Inventory". The SDS must be the most current one supplied by the chemical manufacturer, importer, or distributor.
2. The SDSs shall be maintained with the "Hazardous Chemicals Inventory" by each department or work area and must be readily accessible to any employee at any time during the work shift. SDS may be stored electronically, on microfiche or by other alternatives to paper as long as no barrier to immediate employee access is created by such options.
3. No hazardous material should be used in the department or work area unless an SDS has been obtained for it and the SDS is kept on file. The Receiving Department has been instructed not to receive any hazardous chemical that is not accompanied by a SDS or for which a SDS is not already on file.
4. If any new and significant health information becomes available concerning any hazardous material listed on the "Hazardous Chemicals Inventory", a revised SDS will be placed in the SDS file, and the employees who handle or might be exposed to the chemical will be notified of any changes in work procedures or personal protective equipment required to protect their health and safety.
5. In a department or work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals, SDSs may be kept in the form of operating procedures and may be designed to cover groups of hazardous chemicals. However, in such cases, all required information must be provided for each hazardous chemical, in a form that is readily accessible during each work shift to employees when they are in their department or work area.
6. SDSs will also be made readily available, upon request, to designated representatives of employees, the Assistant Secretary of Labor for Occupational Safety and Health, and the Director of the National Institute for Occupational Safety and Health.

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## **APPENDIX B**

### **Hazardous Materials Inventory Lists**

Chemistry Laboratory Storage list is maintained by the department on a monthly basis and reviewed by the Safety Department on an annual basis.

## APPENDIX C

### Definitions

Absorption means to take in and make a part of an existing whole, for example, a sponge absorbs water.

Acid means any chemical which undergoes dissociation in water with the formation of hydrogen ions. Acids have a sour taste and may cause severe skin burns. They turn litmus paper red and have pH values of 0 to 6.

Acute Effect means an adverse effect on a human or animal body, that takes place soon after exposure. Examples include dizziness, nausea, skin rashes, inflammation, tearing of the eyes, unconsciousness, and even death.

Absorption means the condensation and adhesion of a liquid on the surface of a solid, for example, water will adhere to clay.

Alkali means any chemical substance which forms soluble soaps with fatty acids. Alkalis are also referred to as bases. They may cause severe burns to the skin. Alkalis turn litmus paper blue and have pH values from 8 to 14. (AKA caustic)

Anesthetic means a chemical that causes a total or partial loss of sensation. Overexposure to anesthetics can cause impaired judgment, dizziness, drowsiness, headache, unconsciousness, and even death. Examples include alcohol, paint remover, and degreasers.

Asphyxiant means a vapor or gas which can cause unconsciousness or death by suffocation (lack of oxygen). Most simple asphyxiants are harmful to the body only when they become so concentrated that they reduce oxygen in the air (normally about 21%) to dangerous levels (16% or lower). Asphyxiation is one of the principal potential hazards of working in confined spaces. In addition, some chemicals like carbon monoxide function as chemical asphyxiants by reducing the blood's ability to carry oxygen.

Auto-Ignition means the temperature to which a closed, or nearly closed container's temperature must be heated in order that the flammable liquid, when introduced into the container, will ignite spontaneously or burn.

Boiling Point means the temperature at which a liquid changes to a vapor state, at a given pressure; usually expressed in degrees Fahrenheit at sea level pressure (760 mmHg, or one atmosphere). For mixtures, the initial boiling point or the boiling range may be given. Flammable materials with low boiling points generally present special fire hazards.

Carcinogen means a substance or agent that can cause a growth of abnormal tissue or tumors in humans or animals. A material identified as an animal carcinogen does not necessarily cause cancer in humans. Examples of human carcinogens include coal tar, which can cause skin cancer, and vinyl chloride, which can cause liver cancer.

CAS Chemical Abstracts Service refers to a Columbus, Ohio organization which indexes information published in Chemical Abstracts by the American Chemical Society and provides index guides by which information about particular substances may be located in the Abstracts when needed. CAS numbers identify specific chemicals.

CERCLA means the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. The act requires that the Coast Guard National Response Center be notified in the event of a hazardous substance release. The act also provides for a fund (the Superfund) to be used for the cleanup of abandoned hazardous waste disposal sites.

CFR means the Code of Federal Regulations. A collection of the regulations that have been promulgated under U.S. law.

Chemical Name means the scientific designation of a chemical in accordance with the nomenclature system as developed by the international Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Services (CAS) rules of nomenclature.

Chronic Effects means an adverse effect on a human or animal body that can take months or years to develop after exposure. Examples include cancer and irreversible damage to certain organs.

Chronic Exposure means long-term contact with a substance.

Combustible means able to catch on fire and burn.

Combustible Liquid means any liquid having a flashpoint at or above 100F (37.8C), but Liquid below 200F (93.3C), except any mixture having components with flashpoints of 200F (93.3C) or higher, the total volume of which make up ninety-nine percent (99%) or more of the total volume of the mixture.

Compressed Gas means: (1) Any gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70F (21.1C); or (2) a gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130F (54.4C) regardless of the pressure at 70F (21.1C); or (3) a liquid having a vapor pressure exceeding 40 psi at 100F (37.8C) as determined by ASTM D-323-72.

Concentration means the relative amount of a substance when combined or mixed with other substances. Examples: 2 ppm hydrogen sulfide in air, or a 50 percent caustic solution.

Corrosive (As defined by DOT), means a corrosive material is a liquid or solid that causes visible destruction or irreversible alterations in human skin tissue at the site of contact or - in the case of leakage from its packaging - a liquid that has a severe corrosion rate on steel. Two common examples are caustic soda and sulfuric acid.

Decomposition means a breakdown of a material or substance (by heat, chemical reaction, electrolysis, decay, or other processes) into parts of elements or simpler compounds.

Exothermic means a polymerization reaction that involves the production of heat. Polymerization See Hazardous Polymerization.

Evaporation Rate means the rate at which a particular material will vaporize (evaporate) when compared to the rate of vaporization of a known material. The evaporation rate can be useful in evaluating the health and fire hazards of a material. The known material is usually ethyl ether with a vaporization rate designated as 1.0. Vaporization rates of other solvents or materials are then classified as:

FAST evaporating if greater than 3.0

MEDIUM evaporating if 0.8 to 3.0

SLOW evaporating if less than 0.8

Explosive means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subject to sudden shock, pressure, or high temperature.

Exposure means being actually subjected to a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin contact, or absorption, etc.). The federal Hazard Communication Standard also includes both accidental and possible exposures in this definition of exposure.

FIFRA means the Federal Insecticide, Fungicide, and Rodenticide Act. Under this act regulations administered by EPA require that certain useful poisons, such as chemical pesticides, sold to the public contain labels that carry health hazard warnings to protect users.

Flammability means the range of gas or vapor concentration in air that may ignite Limits or explode if an ignition source is present.

Flammable Gas means: (1) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen percent (13%) by volume or less; or (2) a gas that at ambient temperature and pressure, forms a range of flammable mixtures with air, wider than twelve percent (12%) by volume, regardless of the lower limit.

Flammable Liquid means any liquid having a flashpoint below 100 (37.8C), except any mixture having components with flashpoints of 100F (37.8C) or higher, the total of which make up ninety-nine percent (99%) or more of the total volume of the mixture.

Flammable Solid means a solid, other than a blasting agent or explosive, as defined in 29 CFR 1910.109(a), that is liable to cause fire through friction, absorption or moisture, spontaneous chemical change, or retained heat from manufacturing processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard.

Flash Point means the temperature at which a liquid will give off enough flammable vapor to ignite if an ignition source is present. There are several flash point test methods, and flash points may vary for the same material depending on the method used, so the test method is indicated when the flash point is given (150 PMCC, 200 TCC, etc.).

Hazardous Material means any chemical which is a physical hazard or a health hazard.

Hazardous Polymerization is a chemical reaction in which one or more Polymerization small molecules combine to form larger molecules. A hazardous polymerization is such a reaction which takes place 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 usually contains a polymerization inhibitor, the expected time period before the inhibitor is used up.

*Health Hazard* means 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, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes.

*Ingestion* means the taking in of a substance through the mouth.

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

*Irritant* means a substance which, 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. Some primary irritants: chromic Acid, nitric acid, sodium hydroxide, calcium chloride, amines, metallic salts, chlorinated hydrocarbons, ketones, alcohols.

*Lacrimation* means secretion and discharge of tears.

*LC50* (Lethal Concentration 50%) means the concentration of a material in air which, on the basis of laboratory tests, is expected to kill 50% of a group of test animals when administered as a single exposure (usually 1 or 4 hours). The LC50 is expressed as parts of material per million parts of air, by volume (ppm) for gases and vapors, or as micrograms of material per liter of air (mg/L) for milligrams of material per cubic meter of air (mg/m<sup>3</sup>) for dusts and mists, as well as for gases and vapors.

*LD Lethal Dose* means a concentration of a substance being tested which will kill a test animal.

*LD50* (Lethal Dose 50%) means a single dose of a material which on the basis of laboratory tests is expected to kill 50% of a group of test animals. The LD50 dose is usually expressed as milligrams or grams of material per kilogram of animal body weight (mg/kg or g/kg). If a material has a low LD50, then only a very small amount is needed to cause an adverse effect and that substance would be considered highly toxic. Generally, substances with low LD50s have high toxicity and vice versa.

*LEL* (Lower Explosive Limit or lower flammable limit of a vapor or gas) means the lowest concentration (lowest percentage of the substance in air) that will produce a flash of fire when an ignition source (heat, arc, or flame) is present. At concentrations lower than the LEL, the mixture is too "lean" to burn. Also See UEL.

*LFL* means the Lower Flammable Limit. See LEL.

*Local Effect* means when toxic effects occur directly at the point of contact, the material is said to have a local effect.

*Mutagen* means a material that alters a cell's genetic information and may lead to undesirable inherited conditions.

*Non-routine Task* means a predictable task that occurs infrequently.

OSHA means the Occupational Safety and Health Administration of the U.S. Department of Labor. Federal agency with safety and health regulatory and enforcement authorities for most U.S. industry and business.

Oxidizer means a chemical other than a blasting agent or explosive as defined in 29 CFR 1910.109(a) that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases. Chlorate (ClO<sub>3</sub>), permanganate (MnO<sub>4</sub>), and nitrate (NO<sub>3</sub>) compounds are examples of oxidizers; note that all contain oxygen (O).

Organic Peroxide means an organic compound that contains the bivalent -O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical. Some organic peroxides are highly unstable, and may decompose with explosive force.

PEL (Permissible Exposure Limit) means the legally enforced exposure limit for a substance established by OSHA regulatory authority. The PEL indicates the permissible concentration of air contaminants to which nearly all workers may be repeatedly exposed eight (8) hours a day, forty (40) hours a week, over a working lifetime (30 years) without adverse health effects.

pH means the symbol relating the hydrogen ion (H<sup>-</sup>) concentration to that of a given standard solution. A pH of 7 is neutral. Numbers increasing from 7 to 14 indicate greater alkalinity. Numbers decreasing from 7 to 0 indicate greater acidity.

Physical Hazard means 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.

Poison, Class A A D.O.T. hazard class for extremely dangerous poisons, that is, poisonous gases or liquids of such nature that a very small amount of the gas, or vapor of the liquid, mixed with air is dangerous to life. Some examples: phosgene, cyanogen, hydrocyanic acid, nitrogen peroxide.

Poison, Class B A D.O.T. hazard class for liquid, solid, paste, or semi-solid substances (other than Class A poisons or irritating materials) which are known (or presumed on the basis of animal tests) to be so toxic to man as to afford a hazard to health during transportation. Some examples: arsenic, beryllium chloride, cyanide, mercuric oxide.

Pyrophoric means a chemical that will ignite spontaneously in air at a temperature of 130F (54.5C) or below.

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

Remote Effect is when a toxic effect occurs at a body part some distance from the point of contact, the substance is said to have a remote effect. A remote effect is also known as systemic toxicity.

Routes of Entry is the means by which material may gain access to the body, for example, inhalation, ingestion, injection, and skin contact.

Safe Exposure Level means the level of exposure that will not result in a health hazard.

Safety Data Sheet (SDS) contains specific health and safety information required by the Federal Hazard Communication Standard for any hazardous substance. There is no standard format for a SDS. They will vary in length, format, and appearance, depending on the manufacturer or supplier, who must provide a SDS for each hazardous chemical they produce.

SCBA Self-contained Breathing Apparatus. A respiratory protection device that consists of a supply or a means of respirable air, oxygen, or oxygen generating material, carried by the wearer.

Skin Absorption means the ability of some hazardous chemicals to pass directly through the skin and enter the bloodstream.

Special Fire means special procedures and/or personal protective equipment that Fighting are necessary when a particular substance is involved in a Procedures fire.

Stability means an expression of the ability of a material to remain unchanged. For SDS purposes, a material is stable if it remains in the same form under expected and reasonable conditions of storage or use. Conditions which may cause instability (Dangerous change) are stated - examples, temperatures above 150F, shock from dropping.

Systemic Toxicity means when a toxic effect occurs at a body part some distance from the point of contact, the substance is said to have a systemic effect. Systemic toxicity is also known as remote effect.

Teratogen means a substance or agent to which exposure of a pregnant female can result in malformations in the fetus. An example is thalidomide.

TLV Threshold Limit Value. A term used by ACGIH to express the airborne concentration of a material to which nearly all persons can be exposed day after day, without adverse effects. ACGIH expresses TLVs in three ways:

- 1) TLV-TWA: the allowable time-weighted average concentration for a normal 8-hour work-day or 40 hour work week.
- 2) TLV-STEL: The short-term exposure limit or maximum concentration for a continuous 15-minute period (maximum of four such periods per day, with at least 60 minutes between exposure periods and provided that the daily TLV-TWA is not exceeded).
- 3) TLV-C: the ceiling limit - the concentration that should not be exceeded even instantaneously.

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

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

Trade Secret means any confidential formula pattern, process, device, information or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it.

TWA Time-weighted Average Exposure. ACGIH terminology. See TLV.

UEL Upper Explosive Limit or upper flammable limit of a vapor or gas. The highest concentration (highest percentage of the substance in air) that will produce a flash of fire when an ignition source (heat, arc, or flame) is present. At higher concentrations, the mixture is too "rich" to burn. Also see LEL.

Waste Disposal means the proper disposal methods for contaminated material, recovered Methods liquids or solids and their containers.

Water Reactive means a chemical that reacts with water to release a gas that is either flammable or presents a health hazard. Also denoted dangerous when wet.