

## Appendix B - Glossary

This glossary contains common terms found in the Laboratory Safety Manual and on Material Safety Data Sheets (MSDSs) / Safety Data Sheets (SDSs). Another valuable source for information about MSDS/SDS entries can be found at the web site: <http://www.csuohio.edu/ehs/access-database>

<b>absolute</b>	A chemical substance that is not mixed; pure. For example Absolute Alcohol, ethyl alcohol, containing not more than one percent by weight of water.
<b>ACGIH</b>	American Conference of Governmental Industrial Hygienists, Incorporated. An organization of professional personnel in governmental agencies or educational institutions engaged in occupational safety and health programs. ACGIH develops and publishes recommended occupational exposure limits (see "TLV") for hundreds of chemical substances and physical agents annually. (ACGIH, 1330 Kemper Meadow Drive, Cincinnati, OH 45240-1634; 513-742-2020, <a href="http://www.acgih.org/home.htm">http://www.acgih.org/home.htm</a> )
<b>acids</b>	Any chemical which undergoes dissociation in water with the formation of hydrogen ions. Acids have a sour taste and may cause severe skin burns. Acids turn litmus paper red and have pH values of 0 to 6.
<b>action level</b>	An exposure limit, generally derived as an 8-hour time- weighted average, which requires the employer to initiate certain required activities such as exposure monitoring and medical surveillance.
<b>acute health effect</b>	An adverse effect on a human or animal body, with severe symptoms developing rapidly and coming quickly to a crisis. Also, see "chronic health effect."
<b>acute toxicity</b>	The adverse (acute) effects resulting from a single dose of, or exposure to, a substance. Ordinarily used to denote effects in experimental animals.
<b>acutely hazardous waste</b>	A dangerous material as identified with a dangerous waste number beginning with "P" in 40 CFR 261.33. Contact EH&S at 216-687-9306 for current information.
<b>alkali</b>	Any chemical substances which forms soluble soaps with fatty acids. Alkalis are also referred to as bases. They may cause severe burns to skin. Alkalis turn litmus paper blue and pH values range from 8 to 14.
<b>alopecia</b>	Loss of hair.
<b>analgesia</b>	Loss of sensitivity to pain.
<b>anesthesia</b>	Loss of sensation or feeling.
<b>anhydride</b>	An oxide or compound that when combined with water gives an acid or base.
<b>anhydrous</b>	Free of water.
<b>anorexia</b>	Loss of appetite.
<b>anosmia</b>	Loss of the sense of smell.
<b>anoxia</b>	A lack of oxygen from inspired air (literally without oxygen). Also, see "hypoxia."

<b>ANSI</b>	American National Standards Institute. A privately funded, voluntary membership organization that identifies industrial and public needs for national consensus standards and coordinates development of such standards. Many ANSI standards relate to safe design/performance of equipment such as safety shoes, eyeglasses, smoke detectors, fire pumps, and household appliances; and safe practices of procedures such as noise measurement, testing of fire extinguishers and flame arresters, industrial lighting practices, use of abrasive wheels, etc. (ANSI, 1819 L Street NW, Suite 600, Washington DC 20036, 202-293-8020, <a href="http://www.ansi.org">http://www.ansi.org</a> )
<b>aqueous</b>	A water-based solution.
<b>aquatic toxicity</b>	The adverse effects to marine life that result from being exposed to a toxic substance.
<b>argyria</b>	Local or generalized impregnation (gray-blue color) of the body tissues with silver.
<b>asphyxia</b>	Lack of oxygen and thus interference with the oxygenation of the blood. Can lead to unconsciousness.
<b>asphyxiant</b>	A vapor or gas that 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 (18% or lower). Asphyxiation is one of the principal potential hazards of working in confined spaces.
<b>asthma</b>	A disease characterized by recurrent attacks of dyspnea, wheezing, and perhaps coughing due to spasmodic contraction of the bronchioles.
<b>ASTM</b>	American Society for Testing and Materials. A voluntary membership organization whose members devise consensus standards for materials characterization and use. (ASTM, 1916 Race Street, Philadelphia, PA 19103, 215-299-5400.)
<b>asymptomatic</b>	Neither causing nor exhibiting symptoms.
<b>ataxia</b>	A loss of muscular coordination.
<b>atrophy</b>	A wasting or diminution in the size of tissues, organs, or the entire body.
<b>autoignition temperature</b>	The minimum temperature to which a substance must be heated without application of a flame or spark in order to cause that substance to ignite.
<b>bases</b>	See "alkali."
<b>boiling point</b>	The temperature at which a liquid changes to a vapor state, at a given pressure. Flammable materials with low boiling points (below 100 °F) generally present special fire hazards.
<b>bradycardia</b>	A slow heartbeat. Pulse rate below 60 beats per minute.
<b>bronchitis</b>	Inflammation of the bronchial tubes in the lungs.
<b>buffer</b>	A substance capable in solution of neutralizing both acids and bases.
<b>CAA</b>	Clean Air Act. The federal law enacted to regulate/reduce air pollution. Administered by the EPA.
<b>C or ceiling</b>	The maximum allowable human exposure limit for an airborne substance; not to be exceeded even momentarily. Also, see "STEL" and "TWA."
<b>carcinogen</b>	A substance that causes cancer. Also, see "select carcinogen."
<b>CAS number</b>	An assigned number that identifies the material. CAS stands for Chemical Abstracts Service, located in Columbus, Ohio, organization that 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 and are assigned sequentially. (Chemical Abstracts Service, Division of American Chemical Society, Box 3012, Columbus, OH 43210, 614-447-3600, <http://www.cas.org> )

Fun Fact: The CAS number takes the form of xxxxxx-yy-z, where the “x” series can be any number of 50 or greater up to 6 digits long, and “z” is a digital check derived by multiplying each “y” and “x” digit by a factor (the number of places away from the “z”), and summing these results. Then “z” should be the units digit in the sum. For example, CAS number 591-78-7 is incorrect, because  $(8 \times 1) + (7 \times 2) + (1 \times 3) + (9 \times 4) + (5 \times 5)$  equals  $8 + 14 + 3 + 36 + 25$  which equals 86. So the “z” should have been “6.” The number “591-78-6” is a correct CAS number and is assigned to methyl-n-butyl ketone. (Note: Perhaps the “z” number was actually “7,” and a mistake was made at a different part of the number? Perhaps “591-79-7” or “591-87-7” was the number they meant to write down.)

<b>caustic</b>	See “alkali.”
<b>central nervous system</b>	The brain and spinal cord.
<b>CERCLA</b>	Comprehensive Environmental Response, Compensation, and Liability Act of 1980. Provides for a fund, Superfund, to be used for the cleanup of abandoned hazardous waste disposal sites.
<b>CFR</b>	Code of Federal Regulations. A collection of the regulations that have been promulgated under US law.
<b>chemical family</b>	A group of single elements or compounds with a common general name. Example: Acetone, methyl ethyl ketone (MEK), and methyl isobutyl ketone (MIBK) are of the ketone family; acrolein, furfural, and acetaldehyde are of the aldehyde family.
<b>Chemical Hygiene Officer</b>	See “CHO.”
<b>Chemical Hygiene Plan</b>	See “CHP.”
<b>ChemWatch</b>	A computer network database established to give access to MSDSs/SDSs, and can also do site-specific chemical information including chemical inventories.
<b>CHEMTREC</b>	Chemical Transportation Emergency Center. The national center established by the Chemical Manufacturers Association (CMA) in Washington, DC, in 1971, to relay pertinent emergency information concerning specific chemicals on request. CHEMTREC has a 24-four toll free telephone number (800-424-9300), intended primarily for use by those who respond to chemical transportation emergencies. ( <a href="http://www.chemtrec.org/Chemtrec/">http://www.chemtrec.org/Chemtrec/</a> )
<b>CHO</b>	Chemical Hygiene Officer. An employee who is designated by the employer, and who is qualified by training or experience, to provide technical guidance in the development and implementation of the provisions of the Chemical Hygiene Plan. This definition is not intended to place limitations on the position description or job classification that the designated individual shall hold within the employer's organizational structure. At Cleveland State University, the “CHO” is designated for each laboratory as an individual familiar with the rules, processes and required personal protective equipment and has the authority to enforce proper procedures in that lab. The University CHO (CSU CHO) provides guidance and advises concerning policies university-wide.

<b>CHP</b>	Chemical Hygiene Plan. The written guidance document required to meet the laboratory safety standard. It must address all potential exposures to health hazards from the chemicals in the laboratory and is achieved at Cleveland State University by adding laboratory-specific information to a generalized manual.
<b>chronic health effect</b>	An adverse effect on a human or animal body, with symptoms that develop slowly over a long period of time or that recur frequently. Also, see "acute health effect."
<b>chronic toxicity</b>	Effects resulting from repeated doses of or exposures to a substance over a prolonged period of time.
<b>CO</b>	Carbon monoxide. A colorless, odorless, flammable and very toxic gas produced by the incomplete combustion of carbon; also a by-product of many chemical processes.
<b>CO<sub>2</sub></b>	Carbon dioxide. A heavy, colorless gas produced by the combustion and decomposition of organic substances and as a by-product of many chemical processes. CO <sub>2</sub> will not burn and is relatively nontoxic (although high concentrations, especially in confined spaces, can create hazardous atmospheres and breathing difficulties).
<b>COC</b>	Cleveland Open Cup. A flash point test method.
<b>combustible</b>	A term used by NFPA, DOT, and others to classify certain liquids that will burn, on the basis of flash points. Both NFPA and DOT generally define combustible liquids as having a flash point of 100 °F (37.8 °C) or higher. Non-liquid substances such as wood and paper are classified as ordinary combustibles by NFPA. Also, see "flammable."
<b>common name</b>	A designation for a material other than its chemical name, such as code name, code number, trade name, brand name, or generic name.
<b>concentration</b>	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.
<b>conjunctivitis</b>	Inflammation of the conjunctiva, the delicate membrane that lines the eyelids and covers the eyeballs.
<b>cornea</b>	Transparent structure of the external layer of the eyeball.
<b>corrosive</b>	A chemical that causes visible destruction of, or irreversible alterations in living tissue by chemical action at the site of contact; or in the case of leakage from its packaging, a liquid that has a severe corrosion rate on steel. A solid or liquid waste that exhibits a "characteristic of corrosivity," as defined by RCRA, may be regulated (by EPA) as a hazardous waste.
<b>corrosivity</b>	One of the characteristics of hazardous waste, it refers to the pH of an acid or base or its ability to corrode steel.
<b>CPSC</b>	Consumer Products Safety Commission. The federal agency with responsibility for regulating hazardous materials when they appear in consumer goods. For CPSC purposes, hazards are defined in the Hazardous Substances Act and the Poison Prevention Packaging Act of 1970.
<b>cutaneous</b>	Pertaining to the skin.
<b>CWA</b>	Clean Water Act. The federal law enacted to regulate/reduce water pollution. Administered by the EPA.

<b>cyanides</b>	Any of various salts or esters of hydrogen cyanide containing a CN group, including the extremely poisonous compounds potassium cyanide and sodium cyanide. Segregate from acids and oxidizers.
<b>cyanosis (cyanotic)</b>	A dark purplish coloration of the skin and the mucous membrane due to deficient oxygenation of the blood.
<b>decomposition</b>	Breakdown of a material or substance (by heat, chemical reaction, electrolysis, decay, or other processes) into parts or elements or simpler compounds.
<b>dermal</b>	Used on or applied to the skin.
<b>dermal toxicity</b>	Adverse effects resulting from the skin's exposure to a substance.
<b>dermatitis</b>	Inflammation of the skin.
<b>designated area</b>	An area which may be used for work with "select carcinogens," reproductive toxins, highly toxic chemicals or highly dangerous chemicals. A designated area may be the entire laboratory, an area of a laboratory or a device such as a laboratory hood.
<b>DHHS</b>	U.S. Department of Health and Human Services. A federal agency created in 1980 to replace the Department of Health, Education, and Welfare (DHEW) as "parent" for NIOSH, Public Health Service, and other agencies related to health and safety.
<b>diaphoresis</b>	Perspiration.
<b>disposal</b>	The discharge, deposit or placing of waste into the environment, usually by incineration or burial in landfills.
<b>DOT</b>	U.S. Department of Transportation. A federal agency which regulates transportation of chemicals and other substances to aid in the protection of the public as well as fire, law enforcement, and other emergency response personnel, particularly when transportation incidents occur involving hazardous materials. Detailed DOT classification lists specify appropriate warnings such as "Oxidizing Agent" or "Flammable Liquid" that must be used for various substances.
<b>DOT numbers</b>	Identification numbers that are four-digit numbers, preceded by "UN" or "NA" and are used to identify particular substances for regulation of their transportation. See the DOT publications that describe the regulations.
<b>dyspnea</b>	A sense of difficulty in breathing; shortness of breath.
<b>edema</b>	An abnormal accumulation of clear, watery fluid in the tissues.
<b>EH&amp;S</b>	The Cleveland State University Office of Environmental Health and Safety. 1802 east 25 street , PS 232 Cleveland, Ohio 44115, (216)-687-9306.
<b>electrolyte</b>	Any substance that conducts an electric current in solution.
<b>embolism</b>	Obstruction of a blood vessel by a transported clot, a mass of bacteria, or other foreign material.
<b>emphysema</b>	A swelling or inflation due to presence of air in the connective tissues of the lungs.
<b>employee</b>	An individual employed in a laboratory workplace who may be exposed to hazardous chemicals in the course of his or her assignments.
<b>EPA</b>	U.S. Environmental Protection Agency. The federal agency with environmental protection regulatory and enforcement authority. Administers the CAA, CWA, FIFRA, RCRA, TSCA, and other Federal environmental laws.

**epidemiology** The science which deals with the study of disease in a general population. Determination of the incidence (rate of occurrence) and distribution of a particular disease (as by age, sex, or occupation) may provide information about the causes of the disease.

**epistaxis** Nosebleed; hemorrhage from the nose.

**evaporation rate** 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 normal butyl acetate (NBUAC or n-BuAc), with a vaporization rate designated as 1.0. Vaporization rates of other solvents or materials are then classified as fast, medium or slow, as compared to n-butyl acetate, with examples shown in Table B-1:

**Table B-1 Evaporation Rate Examples**

	Evaporation Rate	Examples
Fast	> 3.0	Hexane - 8.3 Acetone - 5.6 Methyl ethyl ketone (MEK) - 3.8
Medium	0.8 to 3.0	Methyl isobutyl ketone (MIBK) - 1.6 190-proof (95%) Ethyl alcohol-1.4 VM&P naphtha - 1.4
Slow	< 0.8	Xylene - 0.6 Water - 0.3 Mineral spirits - 0.1

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

**extinguishing media** The type of fire extinguisher or extinguishing method appropriate for use on a specific chemical. For example, some chemicals react violently in the presence of water, so other types of extinguishing media would be necessary to control a fire.

**FDA** U.S. Food and Drug Administration. The federal agency which, under the provisions of the Food, Drug and Cosmetic Act, establishes requirements for the labeling of foods and drugs to protect consumers from misbranded, unwholesome, ineffective, and hazardous products. The FDA also regulates materials for food contact service and the conditions under which such materials are approved.

**fibrosis** Formation of fibrous tissue, as in a reparative or reactive process, in excess of amounts normally present.

**FIFRA** Federal Insecticide, Fungicide, and Rodenticide Act. The federal legislation administered by EPA concerning control of chemicals designed to kill organisms. Part of the legislation requires that certain useful poisons sold to the public, such as chemical pesticides, contain labels that carry health hazard warnings to protect users.

**flammable** Describes any solid, liquid, vapor, or gas that will ignite easily and burn rapidly. A flammable liquid is defined by NFPA and DOT as a liquid with a flash point below 100 °F (37.8 °C). (Hazardous waste definition is less than 140 °F.)

<b>flammable limits</b>	The minimum and maximum concentrations of a flammable gas or vapor between which ignition can occur. Concentrations below the lower flammable limit (LFL) are too lean to burn, while concentrations above the upper flammable limit (UFL) are too rich. All concentrations between LFL and UFL are in the flammable range, and special precautions are needed to prevent ignition or explosion.
<b>flash point</b>	The temperature at which a liquid will give off enough flammable vapor to ignite. 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.
<b>formula</b>	The conventional scientific designation for a material (water is H <sub>2</sub> O, sulfuric acid is H <sub>2</sub> SO <sub>4</sub> , sulfur dioxide is SO <sub>2</sub> , etc.).
<b>fume hood</b>	(Laboratory type): A device located in a laboratory, enclosed on five sides with a moveable or fixed partial sash enclosing on the remaining side; constructed and maintained to draw air from the laboratory and to prevent or minimize the escape of air contaminants into the laboratory; and allows chemical manipulations to be conducted in the enclosure without insertion of any portion of the employee's body other than hands and arms.  Note: Walk-in hoods with adjustable sashes meet the above definition provided that the sashes are adjusted during use so that the airflow and the exhaust of air contaminants are not compromised and employees do not work inside the enclosure during the release of airborne hazardous chemicals.
<b>gangrene</b>	Death of tissue combined with putrefaction.
<b>gastroenteritis</b>	Inflammation of the stomach and intestines.
<b>general exhaust</b>	A system for exhausting air containing contaminants from a general work area. Also, see "local exhaust."
<b>generic name</b>	A designation or identification such as code name, code number, trade name, or brand name used to identify a chemical other than by its chemical name.
<b>gingivitis</b>	Inflammation of the gums.
<b>GHS</b>	Globally Harmonized System for the Classification and Labeling of Chemicals (GHS). An international agreement to classify chemicals into certain categories that have specific hazards and warnings, and to use a consistent label format and a consistent "Safety Data Sheet (SDS)" to provide information to those who use the chemical. The classification scheme is at <a href="http://www.unece.org/trans/danger/publi/ghs/ghs_rev01/01files_e.html">http://www.unece.org/trans/danger/publi/ghs/ghs_rev01/01files_e.html</a> .
<b>hazardous chemical</b>	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. See "health hazard" and "physical hazard."  Note: The Hazard Communication Standard provides further guidance in defining the scope of health hazards and determining whether or not a chemical is to be considered hazardous for purposes of this standard.
<b>hazardous waste</b>	Any substance that (a) has a characteristic of hazardous waste (i.e., ignitability, corrosivity, etc.), or (b) is included by name in hazardous waste regulations.
<b>health hazard</b>	A chemical which can cause measurable adverse effects on a human upon being absorbed into the body, such as irritants, corrosives, carcinogens, sensitizers, hepatotoxicants, nephrotoxicants, neurotoxicants, reproductive toxicants, toxic or highly toxic agents, agents which act on the hematopoietic systems, and agents which damage the lungs, skin, eyes, or mucous membranes.

<b>hematuria</b>	The presence of blood in the urine.
<b>hepatic</b>	Pertaining to the liver.
<b>highly dangerous</b>	Chemicals which have extreme hazard due to flammability or reactivity. The criteria for being considered highly dangerous at the Cleveland State University is an NFPA rating of "4" for flammability or a reactivity rating of "3" or "4."
<b>highly toxic</b>	<p>The following criteria identify highly toxic chemicals in accordance with OSHA regulations for identification on MSDSs/SDSs and when determining controls, based on mammalian testing:</p> <ul style="list-style-type: none"><li>• Oral route: LD<sub>50</sub> of 50 mg/kg or less when administered to albino rats weighing 200-300 grams each.</li><li>• Dermal route: LD<sub>50</sub> of 200 mg/kg or less when administered by continuous contact for 24 hours with the bare skin of albino rabbits weighing 2-3 kilograms.</li><li>• Inhalation route: LC<sub>50</sub> in air of 200 ppm or less (gas or vapor) or 2 mg/l or less (mist, fume, or dust) when administered by continuous inhalation for one hour to albino rats weighing 200-300 grams each.</li></ul>
<b>hygroscopic</b>	Readily absorbs moisture from the air.
<b>hypergolic</b>	Describing rocket fuel or propellant that consists of combinations of fuels and oxidizers that ignites spontaneously on contact.
<b>hypoxia</b>	Insufficient oxygen especially applied to body cells.
<b>IARC</b>	International Agency for Research on Cancer. One of the sources that OSHA refers to for data on whether a material is a carcinogen. ( <a href="http://www.iarc.fr/">http://www.iarc.fr/</a> ) (A subsidiary agency of the World Health Organization, with US offices at 525 23 <sup>rd</sup> Street NW, Washington DC 20037, 202-974-3000, <a href="http://www.who.int/en/">http://www.who.int/en/</a> .)
<b>ignitability</b>	One of the characteristics of a hazardous waste, it refers to the waste's ability to burn.
<b>incompatible</b>	A combination of chemicals which could cause dangerous reactions after direct contact with one another.
<b>inflammation</b>	A series of reactions produced in the tissues by an irritant, injury, or infection characterized by redness and swelling caused by an influx of blood and fluids.
<b>ingestion</b>	The taking in of a substance through the mouth, typically swallowing and passing it into the digestive system.
<b>inhalation</b>	The breathing in of a substance in the form of a gas, vapor, fume, mist, or dust.
<b>inhibitor</b>	A chemical that is added to another substance to prevent or slow down an unwanted chemical reaction from occurring.
<b>irritant</b>	Chemicals that causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.
<b>isomers</b>	In chemistry, chemical compounds that have the same molecular weight and atomic composition but differ in molecular structure (e.g., 1-propanol and 2-propanol are isomers).



<b>jaundice</b>	Yellowish discoloration of the skin, whites of eyes, and bodily fluids with bile pigment (bilirubin) caused by any of several pathological conditions that interrupt liver function.
<b>laboratory</b>	An area where chemical manipulations are done for either research, educational, or clinical purposes.
<b>Lacrimation</b>	Secretion and discharge of tears.
<b>lavage</b>	A washing of a hollow organ, such as the stomach.
<b>LC<sub>50</sub> (lethal concentration 50)</b>	The concentration of a material that on the basis of laboratory tests has been shown to kill 50% of a group of test animals when administered as a single exposure (usually 1 or 4 hours). The LC <sub>50</sub> is expressed as parts of material per million parts of air by volume (ppm) for gases and vapors, or as micrograms per liter of air (ug/l) or milligrams per cubic meter of air (mg/m <sup>3</sup> ) for dusts, mists, gases or vapors, or as ppm or mg/l by mass of material in water.
<b>LD<sub>50</sub> (lethal dose 50)</b>	A single dose of a material that on the basis of laboratory tests is expected to kill 50% of a group of test animals. The LD <sub>50</sub> dose is usually expressed as milligrams or grams of material per kilogram of animal weight (mg/kg or g/kg).
<b>LEL or LFL</b>	Lower Explosive Limit or Lower Limit. For a vapor or gas; 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 or UFL."
<b>lesion</b>	Abnormal change, injury, or damage to tissue or to an organ.
<b>leukemia</b>	A progressive, malignant disease of the blood-forming organs.
<b>LFL</b>	Lower Flammable Limit. See "LEL or LFL."
<b>light sensitive chemicals</b>	Chemicals that may react violently or degrade in the presence of light. Store in amber bottles in a cool, dry, dark place.
<b>local exhaust</b>	A mechanical ventilation system for capturing and exhausting contaminants from the air at the point where the contaminants are produced (welding, grinding, sanding, other processes or operations), as opposed to "general exhaust." The work area is often partially enclosed to improve the capture of the contaminants.
<b>malaise</b>	A feeling of general discomfort, distress, or uneasiness; an out-of-sorts feeling.
<b>mechanical exhaust</b>	A powered device, such as a motor-driven fan or air/stream venturi tube, for exhausting contaminants from a workplace, vessel, or enclosure.
<b>medical consultation</b>	Consultation which takes place between an employee and a licensed physician or other healthcare provider for the purpose of determining what medical examinations or procedures, if any, are appropriate in cases where a significant exposure to a hazardous chemical may have taken place.
<b>melting point</b>	The temperature at which a solid substance changes to a liquid state. For mixtures, the melting range may be given.

<b>mil</b>	Generally, one one-thousandth of something. With respect to protective gloves, a unit of thickness equal to one thousandth of an inch. Thin, surgical gloves may be five to seven mils thick. Many industrial gloves are 20 to 35 mils thick.
<b>MSDS</b>	Material Safety Data Sheet. A document describing a chemical's known hazards, which is produced by the chemical manufacturer and provided to the chemical user but now being replaced by Safety Data Sheets (SDSs) as required by OSHA.
<b>mutagen</b>	A substance or agent capable of altering the genetic material in a living cell.
<b>nanoparticle</b>	A particle having at least one dimension on the scale of 100 nanometers or smaller, where chemical and physical properties may differ from bulk material properties. Typically the term applies to deliberately human-designed particles and not those which may occur in nature such as proteins or as a byproduct of other processes, such as the release of nanoparticle-sized combustion products.
<b>narcosis</b>	Stupor or unconsciousness produced by some narcotic drug.
<b>nausea</b>	Tendency to vomit, feeling of sickness at the stomach.
<b>necrosis</b>	Local death of tissue.
<b>neoplasm</b>	A new or abnormal growth of tissue in which the growth is uncontrollable and progressive.
<b>negative pressure</b>	The environmental condition when the air pressure inside a room or containment device is less than the air pressure outside the area of interest. When a fume hood is running, it should be at "negative pressure" to the rest of the room. This is desirable because hazardous chemicals inside the area of interest will be less likely to escape, because air leaks will be into the area. Also, see "positive pressure."
<b>neutralization</b>	A method of chemically treating corrosive hazardous waste by the addition of an acid or base to make the waste neutral.
<b>NFPA</b>	National Fire Protection Association. An international voluntary membership organization to promote/improve fire protection and prevention and establish safeguards against loss of life and property by fire. Best known on the industrial scene for the National Fire Codes, 16 volumes of codes, standards, recommended practices, and manuals developed (and periodically updated) by NFPA technical committees. Among these is NFPA 704. It contains the code for showing hazards of materials using the familiar diamond-shaped label or placard with appropriate numbers or symbols.
<b>NIOSH</b>	National Institute for Occupational Safety and Health. A research agency within the Public Health Service, U.S. Department of Health and Human Services (DHHS) which--among other activities--tests and certifies respiratory protective devices, recommends occupational exposure limits for various substances, and assists OSHA in occupational safety and health investigations and research. ( <a href="http://www.cdc.gov/Niosh/homepage.html">http://www.cdc.gov/Niosh/homepage.html</a> )
<b>NTP</b>	National Toxicology Program. A group within the U.S. Department of Health and Human Services which produces the Annual Report on Carcinogens.
<b>nystagmus</b>	Spastic, involuntary motion of the eyeballs in a horizontal, rotary, or vertical direction.
<b>OBWC</b>	Ohio Bureau of Workers' Compensation is the state agency that is responsible for administering worker safety and health regulations in Ohio: <a href="http://www.bwc.ohio.gov">www.bwc.ohio.gov</a>
<b>olfactory</b>	Relating to the sense of smell.

<b>oliguria</b>	Scanty or low volume of urine.
<b>opaque</b>	Impervious to light rays.
<b>oral</b>	Used in or taken into the body through the mouth.
<b>OSHA</b>	Occupational Safety and Health Administration. The federal agency charged with developing and enforcing regulations to protect workers. <a href="http://www.osha.gov/">http://www.osha.gov/</a> . Alternatively, the Occupational Safety and Health Act (1970), the federal act requiring worker protection programs.
<b>oxidation</b>	In a literal sense, oxidation is a reaction in which a substance combines with the oxygen provided by an oxidizer or oxidizing agent. An oxidizer or oxidizing material is a substance that yields oxygen readily to stimulate the combustion of organic matter such as ozone or chlorinated trisodium phosphate.
<b>oxidizers</b>	Chemicals, other than a blasting agents or explosives, that initiate or promote combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases (e.g. chlorate, permanganate, and nitrate compounds).
<b>palpitation</b>	Irregular, rapid heartbeat.
<b>particularly hazardous substances</b>	Chemicals that are “highly toxic,” “highly dangerous,” “select carcinogens,” “reproductive toxins,” or “select toxins.” A partial list is provided in Appendix H.
<b>PEL</b>	Permissible Exposure Limit. The PEL may be a time-weighted average (TWA) limit of average exposures throughout the work day, or an exposure limit for a shorter period of time.
<b>percent volatile by volume</b>	The percentage of a liquid or solid (by volume) that will evaporate at an ambient temperature of 70 °F (unless some other temperature is stated). Examples: butane, gasoline, and paint thinner (mineral spirits) are 100% volatile; their individual evaporation rates vary, but over a period of time each will evaporate completely.
<b>peroxidizable chemicals</b>	Chemicals that may become shock sensitive or explosive when they oxidize to form an appreciable concentration of peroxides. Also referred to as “peroxide-forming chemicals.
<b>pH</b>	The value that represents the acidity or alkalinity of an aqueous solution. The number is the logarithm, to the base 10, of the reciprocal of the hydrogen-ion concentration of a solution. Pure water has a pH of 7. The substance in an aqueous solution will ionize to various extents giving different concentrations of H <sup>+</sup> and OH <sup>-</sup> ions. For example, the strongest acids have an excess of H <sup>+</sup> ions and a pH of 1 to 3 (HCl, pH=1). The strongest bases have an excess of OH <sup>-</sup> ions and a pH of 11 to 13 (NaOH, pH = 12). The pH scale is logarithmic and the intervals are exponential, so the progression of values represents far greater concentrations than one would suspect (i.e., pH of 3=10,000 to 1 ratio of H <sup>+</sup> ions, while a pH of 4=1000 to 1, pH of 5=100 to 1).
<b>phlegm</b>	Thick mucous from the respiratory passages.
<b>physical hazard</b>	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. More generally, an environmental condition that can cause a mechanical injury to a human or acts from a distance (such as radiation or noise).

<b>PI</b>	Principal Investigator. The senior researcher who has control over a laboratory's spaces and processes.
<b>PMCC</b>	Pensky-Martens Closed Cup. A flash point test method.
<b>pneumoconiosis</b>	Respiratory tract and lung condition caused by inhalation and retention of respirable material.
<b>polymerization</b>	A chemical reaction in which one or more small molecules combines to form larger molecules. A hazardous polymerization is such a reaction that takes place at a rate that releases large amounts of energy.
<b>positive pressure</b>	An environmental condition when the air pressure inside a containment device or a room is higher than the outside air pressure. Air contaminants outside the glove box or room will be less likely to enter and contaminate the device or room, because air leaks and currents will tend to blow them out. Also, see "negative pressure."
<b>PPE</b>	Personal Protective Equipment. Items worn by an individual such as an apron, faceshield, gloves, respirator or hearing protective devices, to prevent illness or injury.
<b>ppm</b>	Parts per million. A measure of the concentration of a gas or vapor in air; the number of molecules of vapor or gas per million molecules of air.
<b>precipitation</b>	A method of chemically treating hazardous wastes in which a substance is separated from solution or suspension by a chemical or physical change.
<b>prostration</b>	Physical exhaustion and incapacitation.
<b>pulmonary edema</b>	Fluid in the lungs.
<b>pyrophoric</b>	Chemicals that will ignite spontaneously in air below 130 °F (54 °C). (e.g., white phosphorus.)
<b>RCRA</b>	Resource Conservation and Recovery Act. The federal legislation that requires controls be placed upon disposal of hazardous waste materials, administered by the EPA.
<b>reactivity</b>	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; or formation of noxious, toxic, or corrosive byproducts 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.
<b>recycling</b>	A general term for the reuse of wastes, it includes reclamation and recovery.
<b>reproductive toxicants</b>	Chemicals that affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis).
<b>respiratory system</b>	The breathing system, includes the lungs and air passages (trachea or "windpipe," larynx, mouth, and nose), as well as the associated nervous and circulatory supply.
<b>S or "Skin"</b>	A notation found in MSDSs/SDSs or regulatory standards that is used to indicate possible significant contribution to overall exposure to a chemical by way of absorption through the skin, mucous membranes, and eyes by direct or airborne contact.
<b>Safety Data Sheet</b>	See "SDS."
<b>SARA Title III</b>	Superfund Amendments and Reauthorization Act, Title III: Also known as the Emergency Planning and Community Right-to-Know Act of 1986, administered by

	EPA, which requires notification of local emergency response agencies as to the amounts of hazardous materials stored by an employer.
<b>satellite generator</b>	A collection area near a hazardous waste's point of generation that is under the control of the person generating the waste.
<b>sclerae</b>	The tough, white, fibrous covering of the eyeball.
<b>SDS</b>	Safety Data Sheet. A document similar to a Material Safety Data Sheet and prepared in accordance with the 2012 Hazard Communication (29 CFR 1910.1200) rule change by OSHA, which implements the Globally Harmonized System for Classifying and Labeling Chemicals (GHS).
<b>secondary containment</b>	A tub, basin, pan, lined box, impervious berm or other type of larger containment system surrounding chemical bottles or cans in storage or use, and able to hold the contents of the largest container of chemical if it were to break open or spill.
<b>select agent</b>	Highly toxic organisms and toxins regulated by the U.S. Department of Health and Human Services. Also, see "select toxin."
<b>select carcinogen</b>	Any chemical that meets one of the following criteria: <ul style="list-style-type: none"><li>• It is regulated under WISHA as a carcinogen;</li><li>• It is listed under the category, "known to be carcinogens," in the Annual Report on Carcinogens published by the National Toxicology Program (NTP)(latest edition);</li><li>• It is listed under Group I ("carcinogenic to humans") by the International Agency for Research on Cancer (IARC) Monographs (latest editions); or</li><li>• It is listed in either Group 2A or 2B by IARC or under the category, "reasonably anticipated to be carcinogens" by NTP, and causes statistically significant tumor incidence in experimental animals in accordance with any of the following criteria:<ul style="list-style-type: none"><li>○ After inhalation exposure of 6-7 hours per day, 5 days per week, for a significant portion of a lifetime to dosages of less than 10 mg/m<sup>3</sup>;</li><li>○ After repeated skin application of less than 300 mg/kg of body weight per week; or</li><li>○ After oral dosages of less than 50 mg/kg of body weight per day.</li></ul></li></ul>
<b>select toxin</b>	A highly toxic "select agent" chemical regulated by the U.S. Department of Health and Human Services. If a select toxin has its LD <sub>50</sub> greater than 0.1 micrograms per kilogram when tested using vertebrates, it is exempt from additional requirements for select agents when it is being used in biomedical research.
<b>sensitization</b>	An immune response reaction states in which further exposure elicits an immune or allergic response. A person previously exposed to a certain material is more sensitive when further contact with this material is encountered.
<b>sensitizer</b>	A substance that on first exposure causes little or no reaction in man or test animals, but which on subsequent 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.

<b>SETA</b>	Setaflash Closed Tester. A flash point test method.															
<b>“skin”</b>	See “S.”															
<b>solid waste</b>	With respect to chemical substances, a non-hazardous chemical waste. A solid waste may be a liquid, gas, or solid.															
<b>solubility in water</b>	<p>A term expressing the percentage of a material (by weight) that will dissolve in water at ambient temperature. Solubility information can be useful in determining spill cleanup methods and fire-extinguishing agents and methods for a material. Terms used to express solubility are:</p> <table><tr><td>Negligible</td><td>=</td><td>Less than 0.1 percent;</td></tr><tr><td>Slight</td><td>=</td><td>0.1 to 1.0 percent;</td></tr><tr><td>Moderate</td><td>=</td><td>1 to 10 percent;</td></tr><tr><td>Appreciable</td><td>=</td><td>More than 10 percent;</td></tr><tr><td>Complete</td><td>=</td><td>Soluble in all proportions.</td></tr></table>	Negligible	=	Less than 0.1 percent;	Slight	=	0.1 to 1.0 percent;	Moderate	=	1 to 10 percent;	Appreciable	=	More than 10 percent;	Complete	=	Soluble in all proportions.
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<b>solvent</b>	A material that can dissolve other materials to form a uniform mixture. Water is a solvent for many chemicals.															
<b>SOP</b>	Standard Operating Procedure. A document that lists specific work practices for a process or operation.															
<b>spasm</b>	An involuntary, convulsive muscular contraction.															
<b>species</b>	A biological type; on MSDSs, species refers to the test animals (usually rats, mice, or rabbits) which were used to obtain the toxicity test data reported.															
<b>specific gravity</b>	An expression of the density (or heaviness) of a material. Ratio of the mass of a body to the mass of an equal volume of water at 4 °C or other specified temperature. If a volume of a material weighs 8 pounds, and an equal volume of water weighs 10 pounds, the material is said to have a specific gravity of 0.8 (8 divided by 10 = 0.8). Insoluble materials with specific gravity of less than 1.0 will float in (or on) water. Insoluble materials with specific gravity greater than 1.0 will sink (or go to the bottom) in water. Most (but not all) flammable liquids have specific gravity less than 1.0 and, if not soluble, will float on water - an important consideration for fire suppression and spill cleanup.															
<b>stability</b>	An expression of the ability of a material to remain unchanged. For MSDS/SDS purposes, a material is stable if it remains in the same form under expected and reasonable conditions of storage or use. Conditions such as temperatures above 150 °F or shock from being dropped that may cause instability (dangerous change) should be stated on the chemical’s MSDS/SDS.															
<b>STEL</b>	Short-Term Exposure Limit. The maximum allowable average exposure level for a short period of time, usually 15 minutes. Also, see “PEL.”															
<b>stupor</b>	Partial or nearly complete unconsciousness.															
<b>subcutaneous</b>	Beneath the skin.															
<b>synonym</b>	Another name or names by which a material is known. Methyl alcohol, for example, is also known as methanol and wood alcohol.															
<b>systemic</b>	Affecting the entire body.															
<b>tachycardia</b>	Excessively rapid heartbeat. Pulse rate above 100.															
<b>TAG</b>	Tagliabue Closed Tester. A flash point test method.															

<b>target organ effects</b>	Chemically caused effects upon organs and systems such as the liver, kidneys, nervous system, lungs, skin, and eyes from exposure to a material.
<b>teratogen</b>	An agent or substance that causes physical defects in the developing embryo.
<b>tinnitus</b>	A ringing or singing sound in the ears.
<b>TLV</b>	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 permanent adverse effects. Since it is updated annually, this guideline level is often more current than the PELs listed in regulations.
<b>TLV - C</b>	TLV – Ceiling. The concentration that should not be exceeded even instantaneously.
<b>TLV - STEL</b>	TLV – Short - Term Exposure Limit. The average concentration over a short period, such as during peak or maximum generation of an airborne contaminant. The guideline limits such peaks to a 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.
<b>TLV - TWA</b>	TLV – Time Weighted Average. The recommended guideline time-weighted average exposure limit for a normal 8-hour workday or 40-hour week. Also, see “TWA.”
<b>toxic</b>	Having (a) an LD <sub>50</sub> of 50-500 mg/kg when administered orally to albino rats weighing 200-300 grams each, (b) an LD <sub>50</sub> of 200-1000 mg/kg when administered by continuous contact for 24 hours with the bare skin of albino rabbits weighing 2-3 kilograms each, or (c) an LC <sub>50</sub> of 200-2000 ppm (gas or vapor) or 2-20 mg/l (mist, fume or dust) when administered by continuous inhalation for one hour to albino rats weighing 200-300 grams each.
<b>toxicity</b>	The sum of adverse effects resulting from exposure to a material, generally by the mouth, skin, or respiratory tract. For RCRA purposes, EPA may regulate solid or liquid wastes that exhibit certain specified “characteristics of toxicity” as hazardous wastes.
<b>treatment</b>	A chemical or physical process that makes the waste less hazardous or non-hazardous, or recovers materials.
<b>TSCA</b>	Toxic Substances Control Act. The federal environmental legislation, administered by EPA, for regulating the manufacture, handling, and use of materials classified as “toxic substances.”
<b>TWA</b>	Time-Weighted Average. The method of averaging exposures to airborne concentrations of a material when levels vary, based on duration of exposures to those levels. For example, an exposure of some chemical at 100 parts per million for 2 hours and 0 parts per million for 6 hours for an 8-hour work day would be the first level times duration plus the second level times duration, divided by total work shift, i.e., (100x2+0x6) divided by 8 hours, or 25 parts per million. This is normally for an 8 hour work day, but other durations may apply as necessary. Used in conjunction with “PEL” and “TLV.”
<b>UEL or UFL</b>	Upper Explosive Limit or Upper Flammable Limit. The highest concentration of a material in air that will produce an explosion or fire when it contacts an ignition source (high heat, electric arc, spark, or flame). A higher concentration of the material with a smaller percentage of oxygen or air may be too rich to be ignited. Care must be taken if using air or oxygen to dilute a high concentration too rich to burn, since at some point the mixture will fall within the explosive or flammable range and may be very hazardous. Also, see “LEL or LFL.”

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<b>unstable</b>	Tending toward decomposition or other unwanted chemical change during normal handling or storage.
<b>urticaria</b>	Nettle-rash; hives; elevated, itching, white patches.
<b>vapor density</b>	The weight of a vapor or gas compared to the weight of an equal volume of air: an expression of the density of the vapor or gas. Materials lighter than air have vapor densities less than 1.0. Materials heavier than air have vapor densities greater than 1.0. All vapors and gases will mix with air, but the lighter materials will tend to rise and dissipate (unless confined). Heavier vapors and gases are likely to concentrate in low places (along or under floors; in dumps, sewers, and manholes; in trenches and ditches), where they may create fire, explosion, or health hazards.
<b>vapor pressure</b>	The pressure exerted by a saturated vapor above its own liquid in a closed container. Vapor pressures reported on MSDSs/SDSs are in millimeters of mercury (mm Hg) at 68 °F (20 °C), unless stated otherwise. (Typically, chemicals with lower boiling points will have higher vapor pressures; e.g., hexane with a boiling point of 69 °C has a vapor pressure of 100 mm Hg, while 1,3-xylene with a boiling point of 139 °C has a vapor pressure of 10 mm Hg)
<b>ventilation</b>	Circulation of air.
<b>vertigo</b>	A feeling of revolving in space; dizziness, giddiness.
<b>viscosity</b>	Measurement of the flow properties of material.
<b>water reactive chemicals</b>	A chemical that reacts with water to release a gas that is either flammable or presents a health hazard.