

ACRONYMS AND COMMON TERMS USED IN SAFETY DATA SHEETS

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Search instructions →

Acid – Any chemical with a low pH that in water solution can burn the skin or eyes. Acids turn litmus paper red and have pH values of 0 to 6.

Acute Effect – Adverse effect on a human or animal which develops rapidly.

Acute Toxicity – Adverse effects occurring following oral or dermal administration of a single dose of a substance, or multiple doses given within 24 hours, or an inhalation exposure of 4 hours. Ordinarily used to denote effects in experimental animals. See OSHA Appendix A to 29 CFR 1910.1200 - Health Hazard Criteria for values defining the exposure routes and categories.

ACGIH – *American Conference of Governmental Industrial Hygienists* is a member-based organization that advances occupational and environmental health and publishes Threshold Limit Value (TLV[®]) occupational exposure guidelines for workplace hazards.

Aerosol – A dispersion of particles in the air. OSHA includes the following definition in Appendix B to 29 CFR 1910.1200 – Physical Criteria in its discussion of flammable aerosols: any non-refillable receptacle containing a gas compressed, liquefied or dissolved under pressure, and fitted with a release device allowing the contents to be ejected as particles in suspension in a gas, or as a foam, paste, powder, liquid or gas.

Alkali – A basic, ionic salt of an alkali metal or alkaline earth metal elements that dissolves in water to form a solution with a pH greater than 7. It can neutralize acid, impart a soapy feel to aqueous solutions and is the most common cause of occupational dermatitis. This term is often used interchangeably with the term “base,” but is the subset of bases that are hydroxides.

Aspiration – The entry of a liquid or solid chemical directly through the oral or nasal cavity, or indirectly from vomiting, into the trachea and lower respiratory system.

Auto-ignition Temperature – Lowest temperature at which a substance will auto-ignite and combust in normal atmospheric conditions without a spark or flame.

Base – A water soluble compound capable of reacting with an acid to form a salt by releasing an un-shared pair of electrons to the acid or by receiving a proton from the acid. Bases can be corrosive, potentially causing damage to the eyes and skin if contacted, and damage to the respiratory and gastrointestinal tracts if inhaled or ingested.

Bioassay – A determination of the concentration of a substance in a human body by an analysis of urine, feces, blood, bone, or tissue.

Biodegradable – Capable of being broken down into individual components by the action of living things.

Boiling Point – The temperature at which a liquid changes to a vapor state at a given pressure. The boiling point is usually expressed in degrees Fahrenheit at sea level pressure (760mm Hg, 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.

°C – Degrees *Centigrade or Celsius* is a scale for measuring temperature. On the Celsius scale, water boils at 100°C and freezes at 0°C.

C or Ceiling – The maximum allowable human exposure limit for an airborne substance which is not to be exceeded even momentarily. Also see PEL and TLV.

CAA – *Clean Air Act* was enacted to regulate/reduce air pollution. CAA is administered by EPA.

Carcinogen – A substance or a mixture of substances which induce cancer or increase its incidence. Substances and mixtures which have induced benign and malignant tumors in well-performed experimental studies on animals are considered also to be presumed or suspected human carcinogens unless there is strong evidence that the mechanism of tumor formation is not relevant for humans.

A chemical is considered to be a carcinogen if: it has been evaluated by the International Agency for Research on Cancer (IARC) and found to be a carcinogen or potential carcinogen; or it is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or it is regulated by OSHA as a carcinogen.

Carcinogenicity – The ability to induce cancer or increase its incidence.

CAS – *Chemical Abstracts Service* is an organization under the American Chemical Society. CAS abstracts and indexes chemical literature from all over the world in Chemical Abstracts. CAS Numbers are used to identify specific chemicals or mixtures.

Caustic – The capability of burning, corroding, or destroying organic tissue.

cc – *Cubic centimeter* is a volume measurement in the metric system which is equal in capacity to one milliliter (ml). One quart is about 946 cubic centimeters.

CNS – The *Central Nervous System* that contains the majority of the nervous system and consists of the brain and spinal cord. These organs supervise and coordinate the activity of the entire nervous system. Sensory impulses are transmitted into the central nervous system, and motor impulses are transmitted out.

CERCLA – *Comprehensive Environmental Response, Compensation, and Liability Act* of 1980. The Act provides for a fund (the Superfund) to be used for the cleanup of abandoned hazardous waste disposal sites.

CFR – *Code of Federal Regulations* is a collection of the regulations that have been promulgated under United States law.

Chemical – Any substance or mixture of substances. See definition of *Substance*.

Chemical Hygiene Plan – A written program developed and implemented by the employer which sets forth procedures, equipment, personal protective equipment and work practices that (A) are capable of protecting employees from the health hazards presented by hazardous

chemicals used in that particular workplace and (B) meets the requirements of paragraph (e) of OSHA's Hazardous Chemicals in Laboratories Standard (29 CFR 1910.1450).

Chemical Manufacturer – An employer with a workplace where chemical(s) are produced for use or distribution.

Chemical Name – The scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name that will clearly identify the chemical for the purpose of conducting a hazard classification.

Chemicals Which, in Contact with Water, Emit Flammable Gases – Are solid or liquid chemicals which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

CHEMTREC – *Chemical Transportation Emergency Center* is a national center established by the Manufacturing Chemical Association (MCA) to relay pertinent emergency information concerning specific chemicals on requests from individuals. CHEMTREC has a 24-hour toll-free telephone number (800-424-9300) to help respond to chemical transportation emergencies.

Chronic Effect – An adverse effect on a human or animal body, with symptoms which develop slowly over a long period of time or which recur frequently.

Chronic Exposure – Long-term contact with a substance.

Chronic Toxicity – Adverse (chronic) effects resulting from repeated doses or exposures to a substance over a relatively prolonged period of time.

Classification – Means to identify the relevant data regarding the hazards of a chemical; review those data to ascertain the hazards associated with the chemical; and decide whether the chemical will be classified as hazardous according to the OSHA definition of hazardous chemical. In addition, classification for health and physical hazards includes the determination of the degree of hazard, where appropriate, by comparing the data with the criteria for health and physical hazards.

Combustible – 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 but below 200°F (93.3°C). Also see flammable. Non-liquid substances such as wood and paper are classified as ordinary combustibles by NFPA.

Combustible Dust – Fine particles that present an explosion hazard when suspended in air in certain conditions.

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.

Concentration – 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.

Conjunctivitis – Inflammation of the conjunctiva, the delicate membrane that lines the eyelids and covers the eyeballs.

Container – Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of safety data sheets or HCS, pipes or

pipng systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.

Corrosive – A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a chemical is considered to be corrosive if, when tested on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in Appendix A to 49 CFR Part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of 4 hours.

CWA – *Clean Water Act* is a federal law enacted to regulate/reduce water pollution. CWA is administered by EPA.

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

Density – The mass (weight) per unit volume of a substance. For example, lead is much denser than aluminum.

Dermal – Relating to the skin.

Dermal Toxicity – Adverse effects resulting from skin exposure to a substance. Ordinarily used to denote effects in experimental animals.

Designated Area – An area which may be used for work involving carcinogens, reproductive toxins or acutely toxic chemicals. A designated area may be the entire laboratory, a controlled area within the laboratory or engineering controls such as a chemical hood.

DOL – U.S. *Department of Labor*. OSHA and MSHA are part of DOL.

DOT – U.S. *Department of Transportation*

Ecotoxicity – The effect of chemicals on fish, wildlife, plants, and other wild organisms.

Edema – An abnormal accumulation of clear watery fluid in the tissues.

Engineering Controls – Environmental, mechanical, or structural factors that serve to encourage, facilitate, or complement safe and healthful behaviors in the workplace. Engineering controls work by removing the worker from the hazard or by removing the hazard from the work environment (by using ventilation in particular).

EPA – U.S. *Environmental Protection Agency*

Evaporation Rate – The rate at which a material will vaporize (evaporate, change from liquid to vapor) when compared to the known rate of vaporization of a standard material. The evaporation rate can be useful in evaluating the health and fire hazards of a material. The designated standard 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** evaporating if greater than 3.0. e.g., Methyl Ethyl Ketone = 3.8, Acetone=5.6, Hexane = 8.3.
- **MEDIUM** evaporating if 0.8 to 3.0. e.g., 190 proof (95%) Ethyl Alcohol = 1.4, VM & P Naphtha = 1.4, Methyl Isobutyl Ketone (MIBK) = 1.6.

- **SLOW** evaporating if less than 0.8. e.g., Xylene =0.6, Isobutyl Alcohol = 0.6, Normal Butyl Alcohol = 0.4, Water = 0.3, Mineral Spirits = 0.1.

Explosives:

- **Explosive chemical** – A solid or liquid chemical which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic chemicals are included even when they do not evolve gases.
- **Explosive item** – An item containing one or more explosive chemicals.
- **Intentional explosive**– A chemical or item which is manufactured with a view to produce a practical explosive or pyrotechnic effect.
- **Pyrotechnic chemical** – A chemical designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative self-sustaining exothermic chemical reactions.
- **Pyrotechnic item** – An item containing one or more pyrotechnic chemicals.
- **Unstable explosive** – An explosive which is thermally unstable and/or too sensitive for normal handling, transport, or use.

Exposure or Exposed – When an employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure. “Subjected” in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption).

Eye Damage, Serious – The production of tissue damage in the eye, or serious physical decay of vision, following application of a test substance to the anterior surface of the eye, which is not fully reversible within 21 days of application.

Eye Irritation – The production of changes in the eye following the application of a test substance to the anterior surface of the eye, which are fully reversible within 21 days of application.

°F – degrees Fahrenheit. Fahrenheit is a scale for measuring temperature. On the Fahrenheit scale, water boils at 212⁰F and freezes at 32⁰F.

FDA – *U.S. Food and Drug Administration*

First Aid – Emergency measures to be taken when a person is suffering from overexposure to a hazardous material, before regular medical help can be obtained.

Flammable aerosol – An aerosol classified as flammable based on its flammable components (gas, liquid, or solid). Does not fall additionally within the scope of flammable gases, liquids, or solids.

Flammable gas – A gas having a flammable range with air at 20⁰C (68⁰F) and a standard pressure of 101.3 kPa (14.7 psi).

Flammable liquid – A liquid having a flash point of not more than 93⁰C (199.4⁰F).

Flammable solid – A solid which is a readily combustible solid, or which may cause or contribute to fire through friction. *Readily combustible solids* are powdered, granular, or pasty chemicals which are dangerous if they can be easily ignited by brief contact with an ignition source, such as a burning match, and if the flame spreads rapidly.

Flash Point – The minimum temperature at which a liquid gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid, as determined in accordance with ASTM D56-05, ASTM D3278, ASTM D3828, ASTM D93-08, or any other method specified in the GHS Revision 3, Chapter 2.6.

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 a hazardous chemical into the workplace.

Formula – The scientific expression of the chemical composition of a material (e.g., water is H₂O, sulfuric acid is H₂SO₄, sulfur dioxide is SO₂).

Fume – A solid condensation particle of extremely small diameter commonly generated from molten metal as metal fume.

g – *Gram* is a metric unit of weight. One ounce U.S. (avoirdupois) is about 28.4 grams.

Gases Under Pressure – Gases which are contained in a receptacle at a pressure of 200 kPa (29 psi) (gauge) or more, or which are liquefied or liquefied and refrigerated. They comprise compressed gases, liquefied gases, dissolved gases and refrigerated liquefied gases.

Genetic – Pertaining to or carried by genes. Hereditary.

Genotoxic – Are agents or processes which alter the structure, information content, or segregation of DNA, including those which cause DNA damage by interfering with normal replication processes, or which in a non-physiological manner (temporarily) alter its replication. Genotoxicity test results are usually taken as indicators for mutagenic effects.

Germ Cell – Any biological cell that gives rise to the gametes (cells that fuse together during fertilization) in organisms that reproduce sexually.

GHS – *United Nations Globally Harmonized System of Classification and Labelling of Chemicals*

g/kg – *Grams per kilogram* is an expression of dose used in oral and dermal toxicology testing to denote grams of a substance dosed per kilogram of animal body weight. Also see kg (kilogram).

Ground/Bond – The procedure used to carry an electrical charge to ground through a conductive path. A typical ground may be connected directly to a conductive water pipe or to a grounding bus and ground rod.

Hazard Category – The division of criteria within each hazard class, e.g., oral acute toxicity and flammable liquids include four hazard categories. These categories compare hazard severity within a hazard class and should not be taken as a comparison of hazard categories more generally.

Hazard Class – The nature of the physical or health hazards, e.g., flammable solid, carcinogen, oral acute toxicity.

Hazard Not Otherwise Classified (HNOC) – An adverse physical or health effect identified through evaluation of scientific evidence during the classification process that does not meet the specified criteria for the physical and health hazard classes addressed in the HCS. This does not extend coverage to adverse physical and health effects for which there is a hazard class, but the

effect either falls below the cut-off value/concentration limit of the hazard class or is under a GHS hazard category that has not been adopted by OSHA (e.g., acute toxicity Category 5).

Hazard Statement(s) – A statement(s) assigned to a hazard class and category that describes the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard.

Hazardous Chemical – Any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified.

HCS – Hazard Communication Standard is an OSHA regulation issued under 29 CFR Part 1910.1200.

Health Hazard – A chemical which is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard. The criteria for determining whether a chemical is classified as a health hazard are detailed in Appendix A to 29 CFR 1910.1200 -- Health Hazard Criteria.

High Risk Operations – Procedures involving the manipulation, handling or reaction of hazardous chemicals where the potential for release of gas, vapor, or aerosol contamination is high. This category includes, but is not limited to (1) rapid exothermic reactions, (2) transfer of electrostatic powders, (3) heating, mixing or transfer of volatile chemicals, (4) pressurized operations where there is a potential for uncontrolled release, and (5) work involving aerosol generation.

HMIS – Hazardous Materials Information System, developed by the American Coatings Association, is a numerical hazard rating that incorporates the use of labels with color-coded bars as well as training materials.

IARC – International Agency for Research on Cancer

IATA – International Air Transport Association

IBC – International Building Code

IMDG – International Maritime Dangerous Goods

Immediate Use – Is when a hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

Impervious – A material that does not allow another substance to pass through or penetrate it.

Incompatible – Materials that could cause dangerous reactions by direct contact with one another.

Ingestion – Taking in by the mouth.

Inhalation – Breathing in of a substance in the form of a gas, vapor, fume, mist, or dust.

Inhibitor – A chemical added to another substance to prevent an unwanted chemical change.

Insoluble – Incapable of being dissolved in a liquid.

Irritant – A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.

kg – Kilogram is a metric unit of weight, about 2.2 U.S. pounds. Also see g/kg, g, and mg.

L – *Liter* is a metric unit of capacity. A U.S. quart is about 9/10 of a liter.

Label – An appropriate group of written, printed or graphic information elements concerning a hazardous chemical that is affixed to, printed on, or attached to the immediate container of a hazardous chemical, or to the outside packaging.

Label Elements – The specified pictogram, hazard statement, signal word and precautionary statement for each hazard class and category.

LC_{L0} – Is called the *lowest lethal concentration*, also called the *lethal concentration low, lowest concentration causing death, and lowest detected lethal concentration*. It is a value for the lowest concentration of a material in air reported to have caused the death of animals or humans.

LC₅₀ - The *lethal concentration* of a material in air that will kill 50 percent of the test animals when administered as a single exposure (usually 1 to 4 hours). Also called the *median lethal concentration and lethal concentration 50*, this value gives you an idea of the relative acute toxicity of an inhalable material. 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 (µg/l) or milligrams of material per cubic meter of air (mg/m³) for dusts and mists, as well as for gases and vapors.

LD_{L0} - *Lethal dose low* is the lowest administered dose of a material capable of killing a specified test species.

LD₅₀ - The dose required to produce the death in 50 percent of the exposed species within a specified time. The LD₅₀ dose is usually expressed as milligrams or grams of material per kilogram of animal body weight (mg/kg or g/kg).

LEL or LFL- *Lower explosive limit or lower flammable limit* is the lower limit of flammability of a gas or vapor at ordinary ambient temperatures expressed in percent of the gas or vapor in air by volume. This limit is assumed constant for temperatures up to 120°C (250°F). Above this, it should be decreased by a factor of 0.7 because explosibility increases with higher temperatures. At concentrations lower than the LEL, the mixture is too lean to burn.

Low Risk Operations – Procedures where the potential for release of gas, vapor, or aerosol contamination is remote.

m – *Meter* is a unit of length in the metric system. One meter is about 39 inches.

m³ – *Cubic meter* is a metric measure of volume, approximately 35.3 cubic feet or 1.3 cubic yards.

Melting Point – The temperature at which a solid substance changes to a liquid state.

Metric System – A decimal system of units based on the meter as a unit length, the kilogram as a unit mass, and the second as a unit time.

mg – *Milligram* is a metric unit of weight which is one-thousandth of a gram.

mg/kg – *Milligrams of substance per kilogram* of body weight is an expression of toxicological dose.

mg/m³ – *Milligrams per cubic meter* is a unit for expressing concentrations of dusts, gases, or mists in air.

µg – *Microgram (mcg)*, one-millionth of a gram.

µm – *Micrometer or Micron* is a unit of length equal to one-millionth of a meter.

Mist – Suspended liquid droplets generated by condensation from the gaseous to the liquid state, or by breaking up a liquid into a dispersed state, such as splashing, foaming or atomizing. Mist is formed when a finely divided liquid is suspended in air.

Mixture – A combination or a solution composed of two or more substances in which they do not react.

ml – *Milliliter* is a metric unit of capacity, equal in volume to 1 cubic centimeter (cc), or approximately one-sixteenth of a cubic inch. One-thousandth of a liter.

mmHg – *Millimeters (mm) of mercury (Hg)* is a unit of measurement for low pressures or partial vacuums.

Molecular Weight (MW) – Also called molecular mass, is equal to the sum of the atomic weights of its constituting atoms.

Mutagen – A substance or agent capable of altering the genetic material in a living cell.

Mutation – A permanent change in the amount or structure of the genetic material in a cell.

Narcosis – A state of stupor, unconsciousness, or arrested activity produced by the influence of narcotics or other chemicals.

Neutralize – To eliminate potential hazards by inactivating strong acids, bases, and oxidizers. For example, acids can be neutralized by adding an appropriate amount of basic substance to the spill.

NFPA – *National Fire Protection Association* is an international membership organization which promotes/improves fire protection and prevention and establishes safeguards against loss of life and property by fire.

ng – *nanogram* is one-billionth of a gram.

NIOSH – *National Institute for Occupational Safety and Health* is part of the Centers for Disease Control and Prevention (CDC) in the Department of Health and Human Services (DHHS) and is the federal agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness.

Non-flammable – Not easily ignited, or if ignited, not burning rapidly.

Non-Sparking Tools – Tools made from beryllium-copper or aluminum-bronze greatly reduce the possibility of igniting dusts, gases, or flammable vapors. Although these tools may emit some sparks when striking metal, the sparks have low heat content and are not likely to ignite most flammable liquids.

NRC – *National Response Center* is a notification center which must be called when significant oil or chemical spills or other environment-related accidents occur. The toll-free telephone number is 1-800-424-8802.

NTP – *National Toxicology Program* publishes an Annual Report on Carcinogens.

Odor – A description of the smell of the substance.

Odor Threshold – The lowest concentration of a substance's vapor, in air, that can be smelled.

Oral – Used in or taken into the body through the mouth.

Organic Peroxide – A liquid or solid organic chemical which contains the bivalent -O-O structure and as such is considered a derivative of hydrogen peroxide, where one or both of the hydrogen atoms have been replaced by organic radicals. Organic peroxides are thermally unstable chemicals, which may undergo exothermic self-accelerating decomposition. In addition, they may have one or more of the following properties:

- Be liable to explosive decomposition
- Burn rapidly
- Be sensitive to impact or friction
- React dangerously with other substances

OSHA – *Occupational Safety and Health Administration*, U.S. Department of Labor.

Overexposure – Exposure to a hazardous material beyond the allowable exposure levels.

Oxidizing Agent – A chemical or substance that brings about an oxidation reaction. The agent may (1) provide the oxygen to the substance being oxidized (in which case the agent has to be oxygen or contain oxygen), or (2) receive electrons being transferred from the substance undergoing oxidation (chlorine is a good oxidizing agent for electron-transfer purposes, even though it contains no oxygen).

Oxidizing Gas – Any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does. Note: “Gases which cause or contribute to the combustion of other material more than air does” means pure gases or gas mixtures with an oxidizing power greater than 23.5% [as determined by a method specified in ISO 10156 or 10156-2 (incorporated by reference, See 29 CFR 1910.6) or an equivalent testing method].

Oxidizing Liquid – A liquid which, while in itself not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material.

Oxidizing Solid – A solid which, while in itself is not necessarily combustible, may, generally by yielding oxygen, cause or contribute to, the combustion of other material.

Partition Coefficient – The ratio of concentrations of a compound in the two phases of a mixture of two immiscible solvents at equilibrium.

PEL – *Permissible exposure limit* is a regulatory limit on the amount or concentration of a substance in the air established by OSHA to protect workers against the health effects of exposure to hazardous substances. It is based on an 8-hour time weighted average (TWA) exposure.

Percent Volatile – Percent volatile by volume is the percentage of a liquid or solid (by volume) that will evaporate at an ambient temperature of 70F (unless some other temperature is specified). Examples: butane, gasoline, and paint thinner (mineral spirits) are 100 percent volatile; their individual evaporation rates vary, but, in time, each will evaporate completely.

pH – The symbol relating the hydrogen ion (H⁻) 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 – A chemical that is classified as posing one of the following hazardous effects: explosive; flammable (gases, aerosols, liquids, or solids); oxidizer (liquid, solid or gas); self-reactive; pyrophoric (liquid or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; or in contact with water emits flammable gas. See Appendix B to 29 CFR 1910.1200 -- Physical Hazard Criteria.

Pictogram – A composition that may include a symbol plus other graphic elements, such as a border, background pattern, or color, that is intended to convey specific information about the hazards of a chemical. Eight pictograms are designated under the HCS for application to a hazard category.

Polymerization – A chemical reaction in which one or more small molecules combine to form larger molecules. A hazardous polymerization is such a reaction that takes place at a rate that releases large amounts of energy. If hazardous polymerization can occur with a given material, the SDS usually will list conditions that could start the reaction and, since the material usually contains a polymerization inhibitor, the length of time during which the inhibitor will be effective.

ppb – *Parts per billion* is the concentration of a gas or vapor in air, parts (by volume) of the gas or vapor in a billion parts of air. Usually used to express extremely low concentrations of unusually toxic gases or vapors; also the concentration of a particular substance in a liquid or solid.

PPE – *Personal Protective Equipment*

ppm – *Parts per million* is the concentration of a gas or vapor in air, parts (by volume) of the gas or vapor in a million parts of air; also the concentration of a particular substance in a liquid or solid.

Precautionary Statement – A phrase that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical or improper storage or handling.

Product Identifier – The name or number used for a hazardous chemical on a label or in the SDS. It provides a unique means by which the user can identify the chemical. The product identifier used shall permit cross-references to be made among the list of hazardous chemicals required in the written hazard communication program, the label and the SDS.

psi – *Pounds per square inch* is the pressure a material exerts on the walls of a confining vessel or enclosure. For technical accuracy, pressure must be expressed as psig (pounds per square inch gauge) or psia (pounds per square inch absolute; that is, gauge pressure plus sea level atmospheric pressure, or psig plus approximately 14.7 pounds per square inch). Also see mmHg.

Pulmonary – Relating to, or associated with, the lungs.

Pyrophoric Gas – A chemical in a gaseous state that will ignite spontaneously in air at a temperature of 130 degrees F (54.4 degrees C) or below.

Pyrophoric Liquid – A liquid which, even in small quantities, is liable to ignite within five minutes after coming into contact with air.

Pyrophoric Solid – A solid which, even in small quantities, is liable to ignite within five minutes after coming into contact with air.

RCRA – *Resource Conservation and Recovery Act* is environmental legislation aimed at controlling the generation, treating, storage, transportation and disposal of hazardous wastes. It is administered by EPA.

Reaction – A chemical transformation or change. The interaction of two or more substances to form new substances.

Reactivity – Chemical reaction with the release of energy. Undesirable effects, such as pressure buildup, temperature increase, and 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.

Readily Combustible Solids – Are powdered, granular, or pasty chemicals which are dangerous if they can be easily ignited by brief contact with an ignition source, such as a burning match, and if the flame spreads rapidly.

Reducing Agent – In a reduction reaction (which always occurs simultaneously with an oxidation reaction) the reducing agent is the chemical or substance which (1) combines with oxygen or (2) loses electrons to the reaction. See oxidation.

Relative Density, or Specific Gravity – The ratio of the density (mass of a unit volume) of a substance to the density of a given reference material.

Reproductive Toxicity – Includes *adverse effects on sexual function and fertility* in adult males and females, as well as *adverse effects on development of the offspring*.

- ***Adverse effects on sexual function and fertility*** – Any effect of chemicals that interferes with reproductive ability or sexual capacity. This includes, but is not limited to, alterations to the female and male reproductive system, adverse effects on onset of puberty, gamete production and transport, reproductive cycle normality, sexual behavior, fertility, parturition, pregnancy outcomes, premature reproductive senescence, or modifications in other functions that are dependent on the integrity of the reproductive systems.
- ***Adverse effects on development of the offspring*** – Any effect of chemicals which interferes with normal development of the conceptus either before or after birth, which is induced during pregnancy or results from parental exposure. These effects can be manifested at any point in the life span of the organism. The major manifestations of developmental toxicity include death of the developing organism, structural abnormality, altered growth and functional deficiency.

Reproductive Toxin – A chemical which affects the reproductive system and may produce chromosomal damage (mutation) and/or adverse effects on the fetus (teratogenesis).

Respiratory Protection – Devices that will protect the wearer's respiratory system from overexposure by inhalation to airborne contaminants. Respiratory protection is used when a worker must work in an area where he/she might be exposed to concentrations in excess of the allowable exposure limit. Respirators provide protection either by removing contaminants from the air before they are inhaled or by supplying an independent source of respirable air. There are two major classifications of respirators:

- ***Air-Purifying*** – Contains an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
- ***Atmosphere-Supplying*** – Devices that provide clean breathing air from an uncontaminated source.

Respiratory Sensitizer – a chemical that will lead to hypersensitivity of the airways following inhalation of the chemical.

Respiratory System – The breathing system that includes the lungs and the air passages (trachea or windpipe, larynx, mouth, and nose) to the air outside the body, plus the associated nervous and circulatory supply.

Responsible Party – Someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

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

Safety Data Sheet (SDS) – The written or printed material concerning a hazardous chemical that is prepared in accordance with the HCS.

SARA – *Superfund Amendments and Reauthorization Act*

Self-Heating Chemical – Is a solid or liquid chemical, other than a pyrophoric liquid or solid, which, by reaction with air and without energy supply, is liable to self-heat; this chemical differs from a pyrophoric liquid or solid in that it will ignite only when in large amounts (kilograms) and after long periods of time (hours or days).

Self-Reactive Chemical – Is a thermally unstable liquid or solid chemical that is liable to undergo a strongly exothermic decomposition even without participation of oxygen (air). This definition excludes chemicals classified as explosives, organic peroxides, oxidizing liquids or oxidizing solids.

Sensitizer – A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical.

Skin Sensitizer – a chemical that will lead to an allergic response following skin contact.

SI – The *International System of Units* is the modern form of the *metric system*.

Signal Word – A word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. The signal words used in the HCS are “danger” and “warning”. “Danger” is used for the more severe hazards, while “warning” is used for the less severe.

Simple Asphyxiant – A substance or mixture that displaces oxygen in the ambient atmosphere, and can thus cause oxygen deprivation in those who are exposed, leading to unconsciousness and death.

Skin – A notation (sometimes used with PEL or TLV exposure data) which indicates that the stated substance may be absorbed by the skin, mucous membranes, and eyes either airborne or by direct contact and that this additional exposure must be considered part of the total exposure to avoid exceeding the PEL or TLV for that substance.

- **Absorption** – Ability of some hazardous chemicals to pass directly through the skin and enter the bloodstream.
- **Corrosion** – The production of irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis, following the application of a test substance for up to 4 hours.
- **Irritation** – The production of reversible damage to the skin following the application of a test substance for up to 4 hours.

Solubility(ies) – 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 re-extinguishing agents and methods for a material.

Solvent – A substance, usually a liquid, in which other substances are dissolved. The most common solvent is water.

Species – On the safety data sheets, species refers to the test animals, usually rats, mice, or rabbits, used to obtain the toxicity test data reported.

Specific Chemical Identity – The chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

Specific Target Organ Toxicity - Single Exposure (STOT-SE) – A specific, non-lethal target organ toxicity arising from a single exposure to a chemical.

Specific Target Organ Toxicity - Repeated Exposure (STOT-RE) – Specific target organ toxicity arising from repeated exposure to a substance or mixture.

Spontaneously Flammable or Ignitable – A material that ignites as a result of retained heat from processing, or which will oxidize to generate heat and ignite, or which absorbs moisture to generate heat and ignite.

Stability – The ability of a material to remain unchanged. For safety data sheet 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; for example, temperatures above 150⁰F; shock from dropping.

Static Discharge – The sudden flow of electricity between two objects caused by contact, an electrical short, or dielectric breakdown.

STEL – *Short Term Exposure Limit* (ACGIH terminology). See TLV.

Substance – A chemical element and its compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the product and any impurities deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.

Synergistic Effect – An effect arising between two or more agents, entities, factors, or substances that produces an effect greater than the sum of the individual effects.

Synonym – Another name or names by which a material is known. Methyl alcohol, for example, is known as methanol or wood alcohol.

Systemic – Affecting the whole body, or at least multiple organ systems.

Target Organ – A bodily organ affected by exposure to a substance.

TC_{Lo} – Toxic concentration low is the lowest concentration of a gas or vapor capable of producing a defined toxic effect in a specified test species over a specified time.

TD_{Lo} – Toxic dose low is the lowest administered dose of a material capable of producing a defined toxic effect in a specified test species.

Teratogen – A substance or agent, exposure to which by a pregnant female can result in malformations in the fetus.

TLV – Threshold Limit Value is a term used by ACGIH to express the airborne concentration of material to which nearly all persons can be exposed day after day without adverse effects.

ACGIH expresses TLVs in three ways:

- **TLV-TWA:** The allowable Time Weighted Average concentration for a normal 8-hour workday or 40-hour workweek.
- **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 daily TLV-TWA is not exceeded).
- **TLV-C:** The ceiling exposure limit, the concentration that should not be exceeded even instantaneously.

Torr – A non-SI unit of pressure, equal to 1/760 atmosphere, chosen to be roughly equal to the fluid pressure exerted by a millimeter of mercury.

Toxic Substance – 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.

Toxicant – Any substance producing a toxic effect.

Toxicity – A relative property of a chemical agent and refers to a harmful effect on some biologic mechanism and the conditions under which this effect occurs.

Trade Name – The trademark name or commercial trade name for a material or product.

Trade Secret – 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.

TSCA – Toxic Substances Control Act (Federal Environmental Legislation administered by EPA) regulates the manufacture, handling, and use of materials classified as toxic substances.

TWA – Time-Weighted Average exposure is the airborne concentration of a material to which a person is exposed, averaged over the total exposure time, generally the total workday (8 hours). Also see PEL and TLV.

UEL or UFL – *Upper explosive limit* or *upper flammable limit* is the highest concentration (expressed in percent vapor or gas in the air by volume) of a substance that will burn or explode when an ignition source is present. At higher concentration the mixture is too rich to burn.

UN – *United Nations*

USDA – *U.S. Department of Agriculture*

Use – To package, handle, react, emit, extract, generate as a byproduct, or transfer.

Vapor – The gaseous form of a solid or liquid substance as it evaporates.

Vapor density – The relative weight of a gas or vapor compared to air, which has an arbitrary value of one. If a gas has a vapor density of less than one, it will generally rise in air. If the vapor density is greater than one, the gas will generally sink in air.

Vapor pressure – Pressure (measured in pounds per square inch absolute - psia) exerted by a vapor. If a vapor is kept in confinement over its liquid so that the vapor can accumulate above the liquid (the temperature being held constant), the vapor pressure approaches a fixed limit called the maximum (or saturated) vapor pressure, dependent only on the temperature and the liquid.

Ventilation – Industrial ventilation is a method of controlling worker exposure to airborne toxic chemicals or flammable vapors with air flow, often by exhausting contaminated air away from the work area and replacing it with clean air.

Viscosity – The tendency of a fluid to resist internal flow without regard to its density.

Work Area – A room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

Workplace – An establishment, job site, or project, at one geographical location containing one or more work areas.