

▼ Glossary of Common MSDS Terms

Excerpt from the *MSDS User's Guide*, courtesy of Shell Oil Company. Single copies of the *Guide* may be obtained from: Shell Oil Company, H.S. & E. Information Services Library, P.O. Box 4320, Houston, TX 77210-4320, (713) 241-1510.

-- A --

Acute Effect - An adverse effect on a human or animal body, with severe symptoms developing rapidly and coming quickly to a crisis. Also see "chronic."

Acute Toxicity -The adverse (acute) effects resulting from a single dose or exposure to a substance. Ordinarily used to denote effects in experimental animals.

ACGIH - American Conference of Governmental Industrial Hygienists; 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.

ANSI - 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 water pumps, household appliances — and safe practices or procedures — such as noise measurement, testing of fire extinguishers and flame arrestors, industrial lighting practices, and use of abrasive wheels.

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API - American Petroleum Institute; voluntary membership organization of the petroleum industry. Among its services, API assists member committees in developing — by the consensus process — and publishing recommended practices for drilling and well servicing, storage tank installation, tank cleaning, piping and fittings, and other industry-related design, installation, and operating practices. API also funds and publishes basic reference books and manuals (e.g., "Industrial Hygiene Monitoring Manual for Petroleum Refineries and Selected Petrochemical Operations").

Asphyxiant - A vapor or gas which can cause unconsciousness or death by suffocation (lack of oxygen). Most simple asphyxiants are harmful to the body only when they become so concentrated that they reduce oxygen in the air (normally about 21 percent) to dangerous levels (18 percent or lower). Asphyxiation is one of the principal potential hazards of working in confined and enclosed spaces.

ASTM - American Society for Testing and Materials; voluntary membership organization with members from a broad spectrum of individuals, agencies, and industries concerned with materials. The world's largest source of voluntary consensus standards for materials, products, systems, and services, ASTM is a resource for sampling and testing methods, health and safety aspects of materials, safe performance guidelines, and effects of physical and biological agents and chemicals.

-- B --

Boiling Point - The temperature at which a liquid changes to a vapor state, at a given pressure; 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. Some approximate boiling points:

Propane	-44°F	Gasoline	100°F
Anhydrous Ammonia	-28°F	Allyl Chloride	113°F
Butane	31°F	Ethylene Glycol	387°F

BOM, or BuMines - Bureau of Mines of the U.S. Department of Interior. BuMines began approving air breathing apparatus in 1918, later added all types of respirators. BOM's respirator testing/approval activities have been discontinued; NIOSH now has this responsibility. Most BOM approvals have expired or been replaced by NIOSH approvals.

-- C --

C - Celsius; a temperature scale, also known as centigrade.

CAA - Clean Air Act; federal law enacted to regulate/reduce air pollution. Administered by EPA

Carcinogen - A substance or agent capable of causing or producing cancer in mammals. The OSHA Hazard Communication Standard (see "Hazard Communication Standard") defines a carcinogen as a substance evaluated by the International Agency for Research on Cancer or by the National Toxicology Program in the Annual Report on Carcinogens and found to be a carcinogen or potential carcinogen, or is regulated by OSHA as a carcinogen.

CAS - Chemical Abstracts Service; a Columbus, Ohio organization affiliated with the American Chemical Society. CAS abstracts and indexes chemical literature from all over the world in "Chemical Abstracts." Information about particular substances may be located in the "Abstracts" when needed. "CAS Numbers" identify specific chemicals or mixtures.

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

Ceiling - The maximum allowable human exposure limit for an airborne substance; not to be exceeded even momentarily. Also see "PEL" and "TLV."

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund); federal environmental legislation, administered by EPA, for regulating cleanup and liability for hazardous waste sites. Also establishes reporting requirements for releases of designated substances into the environment.

Chemical Family - 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.

CHEMTREC - Chemical Transportation Emergency Center; a national center established by the Chemical Manufacturers Association (CMA) in Washington, D.C., in 1970, to relay pertinent emergency

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information concerning specific chemicals on request. CHEMTREC has a 24-hour toll-free telephone number (800-424-9300), intended primarily for use by those who 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. Also see "acute".

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

CNS - Central Nervous System. Early to moderate CNS depression may be evidenced by giddiness, headache, and nausea.

CWA - Clean Water Act; federal law enacted to regulate/reduce water pollution. Administered by EPA

CO - 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.

CO₂ - Carbon dioxide will not burn and is relatively non-toxic (although high concentrations, especially in confined spaces, can create hazardous oxygen-deficient environments).

COC - Cleveland Open Cup; a flashpoint test method.

Combustible - A term used by NFPA DOT, OSHA, and others to classify certain liquids that will burn, on the basis of flashpoints. NFPA, OSHA and DOT generally define "combustible liquids" as having a flashpoint of 100°F (37.8°C) or higher. Also see "flammable." Non-liquid substances such as wood and paper are classified as "ordinary combustibles" by NFPA.

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.

Corrosive - As defined by DOT, a corrosive material is a liquid or solid that causes visible destruction of, or irreversible alterations in, human skin tissue at the site of contact or — in the case of leakage from

its packaging — a liquid that has a severe corrosion rate on steel. A solid or liquid waste which exhibits a “characteristic of corrosivity,” as defined by RCRA may be regulated (by EPA) as a hazardous waste. As defined by OSHA corrosive does not refer to action on inanimate surfaces (e.g., steel).

CPSC - Consumer products Safety Commission; 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.

Cutaneous Toxicity - See "Dermal Toxicity."

--D--

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

Dermal - Used on or applied to the skin.

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

DHHS - U.S. Department of Health and Human Services; created in 1980 to replace the Department of Health, Education and Welfare as “parent” for NIOSH, the Public Health Service, and other agencies related to health and safety.

DOL - U.S. Department of Labor; includes OSHA (Occupational Safety and Health Administration) and MSHA (Mine Safety and Health Administration).

DOT - U.S. Department of Transportation; 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 — which must be used for various substances. DOT requires labeling of hazardous materials in transit.

--E--

EPA - U.S. Environmental Protection Agency; federal agency with environmental protection regulatory and enforcement authority. Administers Clean Water Act, CAA FIFRA RCRA, TSCA CERCLA, and other federal environmental laws.

Epidemiology - The science that 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 cause of the disease.

Evaporation Rate - The rate at which a material vaporizes (evaporates) compared to the rate of vaporization of a known material, usually normal-butyl acetate (NBUAC or nBuAc), with a rate designated as 1.0. Evaporation rate can be useful in evaluating health and fire hazards of a material. Vaporization rates of other materials are classified as:

- **FAST:** evaporating if greater than 3.0. E.g., Methyl Ethyl Ketone (MEK) = 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, MIBK = 1.6.
- **SLOW:** evaporating if less than 0.8. E.G., Xylene = 0.6, Bis-Butyl Alcohol = 0.6, Butyl Alcohol = 0.4, Water = 0.3, Mineral Spirits = 0.1.

-- F --

F - Fahrenheit; a temperature scale.

FDA - The U.S. Food and Drug Administration; under the provisions of the Federal Food, Drug and Cosmetic Act, the FDA establishes requirements for the labeling of foods and drugs. FDA also regulates materials for food contact service and the conditions under which such materials are approved.

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

Flammable - A "flammable liquid" is defined by NFPA, OSHA, and Dot as a liquid with a flashpoint below 100°F (37.8°C). Solids that will

ignite readily or are liable to cause fires under ordinary conditions of transportation through friction or retained heat from manufacturing or processing, and which burn so vigorously and persistently as to create a serious transportation hazard, are classified by DOT and OSHA as "flammable solids." Also see "combustible."

Flashpoint - The temperature at which a liquid will give off enough flammable vapor to ignite. There are several flashpoint test methods, so flashpoints may vary for the same material depending on the method used. The test method is indicated when the flashpoint is given (150° PMCC, 200° TCC, etc.).

Formula - The conventional scientific designation for a material (water is H₂O, sulfuric acid is H₂SO₄, sulfur dioxide is SO₂, etc.).

-- G --

g - gram; a metric unit of weight. One ounce U.S. (avoirdupois) is about 28.4 grams.

g/kg - grams per kilogram; an expression of dose used in oral and dermal toxicology testing to indicate the grams of substance dosed per kilogram of animal body weight. Also see "kg" (kilogram).

General exhaust - A system for exhausting air which contains contaminants from a general work area. Also see "local exhaust."

-- H --

Hazard Communication Standard - Federal standard administered by OSHA regulating transmittal to employees of information on substance hazards. The transmittal is to be by container labeling and other forms of warning, MSDS, and employee training. 29CFR1910.1200.

Hazardous Chemical - As defined in the OSHA Hazard Communication Standard, any chemical which is a physical hazard or a health hazard. Hazardous chemicals require certain specific action under the OSHA standard.

Hazardous Material - In a broad sense, a hazardous material is any substance or mixture of substances having properties capable of producing adverse effects on the health or safety of a human being. In 1971 OSHA adopted the following definition in regulations affecting

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employers in operations subject to the federal Longshoremen's and Harbor Workers' Compensation Act:

“The term hazardous material means a material which has one or more of the following characteristics:

- 1) Has a flashpoint below 140°F., closed cup, or is subject to spontaneous heating;
- 2) Has a threshold limit value below 500 ppm for gases and vapors, below 500 mg/m³ for fumes, and below 25 mppcf for dusts;
- 3) A single-dose oral LD₅₀ below 500 mg/kg;
- 4) Is subject to polymerization with the release of large amounts of energy;
- 5) Is a strong oxidizing or reducing agent;
- 6) Causes first degree burns to skin in short time exposure, or is systemically toxic by skin contact; or
- 7) In the course of normal operations, may produce dusts, gases, fumes, vapors, mists, or smokes which have one or more of the above characteristics. ”

-- I --

Ignitable - As defined by RCRA, a solid, liquid, or compressed gas waste which exhibits a “characteristic of ignitability” (having a flashpoint less than 140°F). It may be regulated (by EPA) as a hazardous waste.

Incompatible - Materials which could cause dangerous reactions from direct contact with one another are described as incompatible.

Ingestion - The taking in of a substance through the mouth.

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

Inhibitor - A chemical which is added to another substance to prevent an unwanted chemical change from occurring.

Internal Standard - A Shell term for an exposure standard established by the company. See the explanation for Section IV of the MSDS.

Irritant - A substance which, by contact in sufficient concentration for a sufficient period of time, will cause an inflammatory response or

reaction of the eye, skin, or respiratory system. The contact may be a single exposure or multiple exposures. Some primary irritants: chromic acid, nitric acid, sodium hydroxide, calcium chloride, amines, metallic salts, chlorinated hydrocarbons, ketones, alcohols. OSHA defines an irritant as a chemical which is not corrosive, but which causes a reversible inflammatory effect on living tissues by chemical action at the site of contact.

Irritating Material - As defined by DOT, is a liquid or solid substance which upon contact with fire or when exposed to air gives off dangerous or intensely irritating fumes (not including poisonous materials; see "Poison, Class A" and "Poison, Class B").

-- **K** --

kg - Kilogram; a metric unit of weight, about 2,2 U.S. pounds. Also see "g/kg", "g" and "mg"

-- **L** --

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

LC - Lethal Concentration; a concentration of a substance being tested that will kill a test animal. See the explanation for Section IIB of the MSDS.

LC₅₀ - Lethal Concentration₅₀; the concentration of a material in air which, on the basis of laboratory tests, is expected to kill 50% of a group of test animals when administered as a single exposure (usually 1 or 4 hours). The LC₅₀ is expressed as part 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 - Lethal Dose; a concentration of a substance being tested that will kill a test animal. See the explanation for Section IIB of the MSDS.

LD₅₀ - Lethal Dose₅₀; a single dose of a material which on the basis of laboratory tests is expected to kill 50 percent of a group of test animals. The LD₅₀ dose is usually expressed as milligrams or grams of material per kilogram of animal body weight (mg/kg or g/kg). The material may be administered by mouth (oral) or applied to the skin (dermal or

cutaneous).

LEL, or LFL - Lower Explosive Limit or Lower Flammable Limit of 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."

Local exhaust - A system for capturing and exhausting contaminated air at the point where the contaminants are produced (welding, grinding, sanding, or other processes or operations). Also see "general exhaust."

-- M --

M³ - cubic meter, or stere; a metric measure of volume, about 35.3 cubic feet or 1.3 cubic yard.

Melting point - The temperature at which a solid substance changes to a liquid state. For mixtures, the melting range may be given. Some approximate melting points:

Water	32° F	Benzene	60° F
Vinyl Chloride	-247°F	Phenol	118°F

Mechanical exhaust - A powered device, such as a motor-driven fan or air/steam venturi tube, for exhausting contaminants from a workplace, vessel, or enclosure.

mg - milligram; a metric unit of weight. There are 1,000 milligrams in one gram (g) of a substance. mg/kg - milligrams per kilogram; an expression of toxicological dose. See "g/kg." mg/m³ - milligrams per cubic meter; a unit for measuring concentrations of dusts, gases, or mists in air.

ml - milliliter; a metric unit of volume, equal to one cubic centimeter (cc), or about 1/16 of a cubic inch. There are 1,000 milliliters in one liter (l).

mm Hg - millimeters (mm) of mercury (Hg); a unit of measurement for low pressures or partial vacuums. One atmosphere (sea level, 20°C) is 760 mm Hg.

mppcf - million particles per cubic foot; a unit for measuring particles of a substance suspended in air. Exposure limits for mineral dusts

(silica, graphite, Portland cement, nuisance dusts, and others), formerly expressed as mppcf, are now more commonly quoted in mg/m³. **MSHA** - The Mine Safety and Health Administration of the U.S. Department of Labor, federal agency with safety and health regulatory and enforcement authorities for the mining industry. Also see "OSHA"

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

-- N --

N₂ - Nitrogen; a colorless, odorless, and tasteless gas that will not burn and will not support combustion. The earth's atmosphere (air) is about 78 per cent nitrogen; at higher concentrations, nitrogen can displace oxygen and become a lethal asphyxiant. See "Asphyxiant."

NaOH - Sodium hydroxide, or caustic soda ("caustic"). Necrosis - Tissue death at the site of contact or injection.

NRC - National Response Center; a notification center in the Coast Guard Building in Washington, D.C., with a toll-free telephone number (1-800-424-8802) which must be called when significant oil or chemical spills or other environmentally-related accidents occur.

NBUAC, or n-BuAC - normal-butyl acetate. See "evaporation rate."

NIOSH - National Institute for Occupational Safety and Health of the Public Health Service, U.S. Department of Health and Human Services (DHHS); federal agency which -- among other activities -- tests and certifies respiratory protective devices and air sampling detector tubes, recommends occupational exposure limits for various substances, and assists OSHA and MSHA in occupational safety and health investigations and research.

NO_x - oxides of nitrogen; undesirable air pollutants. NO emissions are regulated by EPA under the Clean Air Act.

-- O --

Olfactory - relating to the sense of smell. The olfactory organ in the nasal cavity is the sensing element that detects odors and transmits information to the brain through the olfactory nerves.

Oral - used in or taken into the body through the mouth.

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

OSHA - Occupational Safety and Health Administration of the U.S. Department of Labor; federal agency with safety and health regulatory and enforcement authorities for most U.S. industry and business. Also see "MSHA."

Oxidation - In a literal sense, oxidation is a reaction in which a substance combines with oxygen provided by an oxidizer or oxidizing agent (see definitions below). In a broader sense, based on modern atomic theory, science today defines oxidation as a reaction brought about by an oxidizing agent in which atoms, molecules, or ions lose electrons. In this broader sense, an oxidation reaction may occur even when oxygen is not present. However it may be defined, an oxidation reaction is always accompanied by an offsetting (balancing) reduction reaction in which (1) oxygen is removed from a compound, or (2) atoms, molecules, or ions gain electrons.

Oxidizer - DOT defines an oxidizer or oxidizing material as a substance that yields oxygen readily to stimulate the combustion (oxidation) of organic matter. Compounds containing chlorate (ClO_3), permanganate (MnO_4) and nitrate (NO_3) are examples of oxidizers; note that all contain oxygen (O).

Oxidizing Agent - A chemical or substance which 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) it may 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).

-- P --

PEL - Permissible Exposure Limit; an exposure limit established by OSHA regulatory authority. May be a time-weighted average (TWA) limit or a maximum concentration exposure limit. Also see "Skin."

% Volatile - Percent volatile by volume; 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, gaso-

line, and paint thinner (mineral spirits) are 100% volatile; their individual evaporation rates vary, but over a period of time each will evaporate completely. EPON solutions however, may be only 10% to 60% volatile; only the solvent evaporates, leaving the resin as a non-volatile residue.

PMCC - Pensky-Martens Closed Cup; a flashpoint test method.

Poison, Class A - A DOT term for extremely dangerous poisons, that is, poisonous gases or liquids of such nature that a very small amount of the gas, or vapor of the liquid, is dangerous to life. Some examples: phosgene, cyanogen, hydrocyanic acid, nitrogen peroxide.

Poison, Class B - A DOT term for a liquid, solid, paste, or semisolid substance — other than Class A poisons or irritating materials — which are known (or presumed on the basis of animal tests) to be so toxic to people as to afford a hazard to health during transportation.

Polymerization - A chemical reaction in which one or more small molecules combine to form larger molecules. A hazardous polymerization is one which takes place at a rate which releases large amounts of energy. If a hazardous polymerization can occur with a given material, the MSDS usually will list conditions which could start the reaction and, since the material usually contains a polymerization inhibitor, the expected time period before the inhibitor is used.

ppm - Parts per million; a unit for measuring the concentration of a gas or vapor in air — parts (by volume) of the gas or vapor in a million parts of air. Also used to indicate the concentration of a particular substance in a liquid or solid.

ppb - Parts per billion; a unit for measuring 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 measurements of extremely low concentrations of unusually toxic gases or vapors. Also used to indicate the concentration of a particular substance in a liquid or solid.

psi - Pounds per square inch; for MSDS purposes, a unit for measuring 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 about 14.7 pounds per square inch). Also see "mm Hg."

-- R --

Reaction - A chemical transformation or change; the interaction of two or more substances to form new substances.

Reactivity - A description of the tendency of a substance to undergo chemical reaction with the release of energy. Undesirable effects, such as pressure buildup, temperature increase, formation of noxious, toxic, or corrosive by-products, may occur because of the reactivity of a substance to heating, burning, direct contact, with other materials, or other conditions in use or in storage. A solid waste which exhibits a “characteristic of reactivity,” as defined by RCRA, may be regulated (by EPA) as a hazardous waste.

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 in the reaction. See “Oxidation.”

Respiratory system - The breathing system; 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 systems.

RCRA- Resource Conservation and Recovery Act; federal environment legislation administered by EPA, aimed at controlling the generation, treating, storage, transportation, and disposal of hazardous wastes.

-- S --

Sensitizer - As defined by OSHA, 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 sensitization is the most common form of sensitization in the industrial setting, although respiratory sensitization to a few chemicals is also known to occur.

SETA - Setaflash Closed Tester; a flashpoint test method.

“Skin” - A notation, sometimes used with PEL or TVL exposure data; indicates that the stated substance maybe absorbed by the skin, mucous membranes, or eyes — by direct contact or airborne exposure — and that this additional exposure must be considered part of the total exposure when comparing exposures to the PEL or TLV for that

substance.

Skin Sensitizer - See “Sensitizer.”

Skin Toxicity - See “Dermal Toxicity.”

Solubility in water - 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. Terms used to express solubility are:

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

SO_x - Oxides of sulfur; undesirable air pollutants. SO_x emissions are regulated by EPA under the Clean Air Act.

Species - A biological type; on MSDS species refers to the test animals — usually rats, mice, or rabbits — which were used to obtain the toxicity test data reported.

Specific gravity - The weight of a material compared to the weight of an equal volume of water; an expression of the density (or heaviness) of the material. Example: if a volume of a material weighs 8 pounds, and an equal volume of water weighs 10 pounds, the material has a specific gravity of 0.8:

8 lbs.
10 lbs.

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 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.

Stability - An expression of the ability of a material to remain unchanged. For MSDS 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, e.g., temperatures above 150°F or shock from dropping.

STEL - Short Term Exposure Limit; ACGIH terminology. See "TLV/STEL."

_____ = 0.8

Superfund - See CERCLA

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

-- T --

TCC - Tag (Tagliabue) Closed Cup; a flashpoint test method.

Teratogen - A substance or agent to which exposure of a pregnant female can result in malformation in the fetus.

TLV - Threshold Limit Value; ACGIH to defines three categories of TLV's:

TLV/TWA: the Time Weighted Average concentration for a normal 8-hour workday and a 40-hour work week to which nearly all persons may be exposed day after day, without adverse effects.

TLV/STEL: the Short-Term Exposure Limit, a 15-minute time-weighted average exposure which should not be exceeded at any time during a work day, even if the 8-hr. TWA is not exceeded (should not be longer than 15 minutes nor repeated more than four times per day, with at least 60 minutes between successive exposures at the STEL).

TLV/C: the Ceiling exposure limit — the concentration that should not be exceeded during any part of the working exposure.

Also see "Skin" in the Glossary relative to TLV's.

TOC - Tag Open Cup; a flashpoint test method.

Toxicity - the sum of adverse effects resulting from exposure to a or liquid wastes which exhibit certain specified "characteristics of toxicity" may be regulated by EPA as hazardous wastes.

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

TSCA - Toxic Substances Control Act; federal environmental legislation administered by EPA, for regulating the manufacture, handling, and use of materials classified as "toxic substances."

TWA - Time-Weighted Average exposure; the airborne concentration of a material to which a person is exposed, averaged over the total exposure time — generally the total workday (8 to 12 hours). Also see "TLV."

-- U --

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

Unstable - Tending toward decomposition or other unwanted chemical change during normal handling or storage.

USDA - U.S. Department of Agriculture; prior to 1971, USDA performed tests and issued approvals on respirators for use with pesticides. In 1971 the Bureau of Mines took over the respirator testing/approval functions — procedures later delegated to the Testing and Certification Branch (TCB) of NIOSH. Also see "BOM."

-- V --

Vapor density - 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 184 have vapor densities less than 1.0 (examples: acetylene, methane, hydrogen). Materials heavier than air (examples: propane, hydrogen sulfide, ethane, butane, chlorine, sulfur dioxide) 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 or in sumps, sewers, manholes, trenches, and ditches — where they may create fire or health hazards.

Vapor pressure - The pressure exerted by a saturated vapor above its own liquid in a closed container. When quality control tests are performed on products the test temperature is usually 100° F, and the

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vapor pressure is expressed as pounds per square inch (psig or psia). Vapor pressures reported on MSDS are in millimeters of mercury (mm Hg) at 68°F (20°C), unless stated otherwise. Three facts are important to remember:

1. Vapor pressure of a substance at 100° F, will always be higher than the vapor pressure of the substance at 68°F (20°C).
2. Vapor pressures reported on MSDS in mm Hg are usually very low pressures; 760 mm Hg is equivalent to 14.7 pounds per square inch.
3. The lower the boiling point of a substance, the higher its vapor pressure.

Ventilation - See "General Exhaust," "Local Exhaust," and "Mechanical Ventilation."