

Glossary of Common MSDS Terms and Acronyms

The following terms and acronyms are often found on Material Safety Data Sheets. This glossary can be used by College of Chemistry employees as a tool in assessing the hazards of chemicals in the workplace. Please call the College of Chemistry Health and Safety Program (3-0648) if you need clarification or additional information about anything found on a MSDS.

A

ACGIH:

American Conference of Governmental Industrial Hygienists. An organization of professionals in governmental agencies or educational institutions engaged in occupational safety and health programs. ACGIH develops and publishes commended occupational exposure limits for chemical substances and physical agents.

(6500 Glenway Ave., Bldg. D-7, Cincinnati, OH. 45211; [513]661-7881.)

ACUTE TOXICITY:

Adverse effects resulting from a single dose of or exposure to a substance.

ALARA:

Acronym for “as low as reasonably achievable.”

ANSI:

American National Standards Institute. A privately funded organization that identifies industrial/public national consensus standards and coordinates their development.

ASPHYXIANT:

Vapor or gas which causes unconsciousness or death by suffocation. Most simple asphyxiants are harmful to the body only when they become so concentrated that they reduce oxygen in air (normally 21%) to dangerous levels (19.5% or lower). Asphyxiation is a potential hazard of working in confined spaces. Some chemicals like Carbon Dioxide function as chemical asphyxiants by reducing the blood's ability to carry oxygen.

ASTM:

American Society for Testing and Materials.

AUTOIGNITION TEMPERATURE:

Minimum temperature which a substance must be heated without application of flame or spark to cause substance to ignite.

B

BIOLOGICAL EXPOSURE INDEXES (BEI):

Numerical values based on procedures to determine the amount of a material absorbed into the human body by measuring it or its metabolic products in tissue, fluid or exhaled air.

BRONCHITIS:

Inflammation of the bronchial tubes in the lungs.

C

CARCINOGEN:

Substance or agent capable of causing or producing cancer in mammals.

(CAS) CHEMICAL ABSTRACTS SERVICE NUMBER:

An assigned number used to identify a chemical. CAS stands for Chemical Abstracts Service, an organization that indexes information published in Chemical Abstracts by the American Chemical Society and that provides index guides by which information about particular substances may be located in the abstracts. Sequentially assigned CAS numbers identify specific chemicals, except when followed by an asterisk(*) which signifies a compound (often naturally occurring) of variable composition. The numbers have no chemical significance. The CAS number is a concise, unique means of material identification.

CEILING:

Maximum allowable human exposure limit for airborne substances; not to be exceeded even momentarily.

CHEMICAL PNEUMONITIS:

Inflammation of the lungs caused by accumulation of fluids due to chemical irritation.

CHRONIC TOXICITY:

Adverse effects resulting from repeated doses of or exposures to a material over a relatively prolonged period of time. Ordinarily used to denote effects noted in experimental animals.

CNS:

Central Nervous System, the brain and spinal cord.

COMBUSTIBLE LIQUIDS:

Term used by NFPA and DOT to classify certain liquids that will burn, on the basis of flash points. NFPA and DOT generally define “combustible liquids” as having a flash point of 100F or higher. They do not ignite as easily as flammable liquids; however, they can be ignited under certain conditions, and must be handled with caution.

COMPRESSED GAS:

Material contained under pressure (dissolved gas, liquefied by compression or refrigeration).

CONFINED SPACE:

Any area that has limited openings for entry and exit that would make escape difficult in an emergency, has a lack of ventilation, contains known and potential hazards, and is not intended nor designated for continuous human occupancy.

CONJUNCTIVITIS:

Inflammation of conjunctiva, the delicate membrane that lines eyelid and covers the eyeball.

CORROSIVE:

Liquid or solid that causes visible destruction or irreversible alterations in skin tissue at site of contact, or, in the case of leakage from its packaging, liquid that has severe corrosion rate on steel.

CRYOGENIC:

Relating to extremely low temperature as for refrigerated gases.

D**DEFATTING:**

Removal of natural oils from the skin by fat-dissolving solvents or other chemicals.

DERMATITIS:

Inflammation of the skin.

DESIGNATED AREA:

An area of (or device within) a lab to be used for work with “select carcinogens”, reproductive toxins,

and other materials which have a high degree of acute toxicity. An administrative control intended to minimize the potential for employee exposure to hazardous chemicals.

DYSPNEA:

Sense of difficulty in breathing; shortness of breath.

E**EDEMA:**

Abnormal accumulation of clear, watery fluid in body tissue.

EMBRYOTOXIN:

Material harmful to a developing embryo at a concentration that has no adverse effect on the pregnant fetus.

ENGINEERING CONTROLS:

Systems that reduce potential hazards by isolating the worker from the hazard or by removing the hazard from the work environment. Methods include ventilation, isolation, and enclosure.

ERGONOMICS:

Study of human characteristics for the appropriate design of living and work environments.

EXPOSURE LIMITS:

Concentration in air of a chemical that is thought to be acceptable.

F**FIBROSIS:**

Formation of fibrous tissue, as in reparative or reactive process to particulates, in excess of amounts normally present in lung tissue walls. This reduces the oxygen and carbon dioxide exchange efficiency.

FLAMMABLE:

Defined by DOT and NFPA as a liquid with a flash point below 100 degrees F.

FLAMMABLE LIMITS:

Minimum and maximum concentrations of flammable gas or vapor between which ignition occurs.

FLASH POINT:

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 methods used, so the test methods is indicated when the flash point is given.

G**GASTROINTESTINAL TRACT:**

Stomach and intestine as a functional unit.

GENERAL VENTILATION:

Removal of contaminated air and its replacement with clean air from general workplace area as opposed to local ventilation, which is specific air changing in immediate air of a contamination source.

GROUNDING:

Safety practice to conduct electrical charge to ground, preventing igniting sparks of a material.

H**HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS):**

Developed by the NFPA to provide information on health, flammability, and reactivity hazards that are encountered in the workplace. A number is assigned to a material indicating the degree of hazard, from 0 for the least up to 4 for the most severe. Letters are used to designate personal protective equipment.

HEPATOTOXIN:

A substance that causes injury to the liver.

HYDROCARBON:

Organic compound composed only of carbon and hydrogen. Petroleum, natural gas, and coal are the main sources of hydrocarbons for industry.

HYGROSCOPIC:

Readily absorbing available moisture in any form.

HYPOXIA:

Insufficient oxygen, especially applied to body cells.

I**IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH):**

Maximum concentration from which one could escape within 30 minutes without any escape-impairing symptoms or any irreversible health effects.

INCOMPATIBLE:

Materials which could cause dangerous reactions from direct contact with another.

INFLAMMABLE:

Capable of being easily set on fire and continuing to burn, especially violently.

IRRITANT:

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.

L**LACRIMATOR:**

Material that produces tears.

LATENCY PERIOD:

Time that elapses between exposure and the first manifestations of disease or illness.

LC50:

Lethal concentration 50, median lethal concentration. The concentration of a material in air that on the basis of laboratory test (respiratory route) is expected to kill 50% of a group of test animals when administered as a single exposure in a specific time period, usually 1 hour LC50 is expressed as parts of material per million parts of air, by volume (PPM) for gases and vapors, as micrograms of material per liter of air (ug/l), or milligrams of material per cubic meter of air (mg/m³) for dusts and mists, as well as for gases and vapors.

LCLo:

Lethal concentration low. The lowest concentration of a substance in air reported to have caused death

in humans or animals. The reported concentrations may be entered for periods of exposure that are less than 24 hr (acute) or greater than 24 hr (subacute and chronic).

LD50:

Lethal dose 50. The single dose of a substance that causes the death of 50% of an animal population from exposure to the substance by any route other than inhalation. LD50 is usually expressed as milligrams or grams of material per kilogram of animal weight (mg/kg or g/kg). The animal species and means of administering the dose (oral, intravenous, etc.) should also be stated.

LDLo:

Lethal dose low. The lowest dose of substance introduced by any route, other than inhalation, reported to have caused death in humans or animals.

LEUKEMIA:

Progressive, malignant disease of the blood-forming organs.

LOCAL VENTILATION:

Drawing off and replacement of contaminated air directly from its source.

LOWER EXPLOSIVE (FLAMMABLE) LIMIT (LEL):

Lowest concentration (lowest percentage of the substance in air) that will produce a flash of fire when an ignition source (heat, electric arc, or flame) is present.

M**MALAISE:**

Feeling of general discomfort, distress, or uneasiness.

mg/m³:

Milligram per cubic meter of air. $\text{mg/m}^3 = \text{PPM} \times \text{MW}/24.45$ at 25°C.

MUTAGEN:

Substance or agent capable of altering the genetic material in a living cell. Many mutagens are carcinogenic.

N**NEPHROTOXIC:**

Poisonous to the kidney.

O

ODOR THRESHOLD:

Lowest concentration of a substance's vapor, in air, that can be smelled.

ORGANIC (CHEMICAL):

Compounds composed of carbon, hydrogen, and other elements with chain or ring structure.

OXIDIZER:

Substance that yields oxygen readily to stimulate the combustion of organic matter.

P

PARTS PER MILLION (PPM):

Unit for measuring concentration of a gas or vapor in air. Parts 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.

PERMISSIBLE EXPOSURE LIMIT (PEL):

Legally enforced exposure limit for a substance established by OSHA. The PEL indicates the permissible concentration of air contaminants to which nearly all workers may be repeatedly exposed 8 hours a day, 40 hours a week, over a working lifetime (40 years), without adverse effects.

PETROLEUM DISTILLATE:

Complex mixture of hydrocarbons, liquid at normal ambient conditions, separated from crude oil and other refinery process streams by distillation.

pH:

Scale of 0 to 14 representing acidity or alkalinity of aqueous solution. Pure water has pH of 7. Substance in aqueous solution will ionize to various extent giving different concentrations of H⁺ and OH⁻ ions.

PNEUMOCONIOSIS:

Respiratory tract and lung condition caused by inhalation and retention of irritant mineral or metallic particles. An X-ray can detect changes, which include fibrosis.

POLYMERIZATION:

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 that can cause fires or explosions or burst containers. Materials that can polymerize usually contain inhibitors that can delay the reaction.

PRIMARY SKIN IRRITANT:

A non-corrosive substance which produces severe skin irritation.

PULMONARY EDEMA:

Fluid in the lungs.

PYROPHORIC:

Materials that ignite spontaneously in air below 130 degrees F. Occasionally friction will ignite them.

R**REACTIVE MATERIAL:**

Chemical substance or mixture that will vigorously polymerize, decompose, condense, or become self-reactive due to shock, pressure, or temperature. Includes explosive materials, organic peroxides, pressure-generating materials, and water-reactive materials.

RENAL:

Pertaining to the kidney.

REPRODUCTIVE HEALTH HAZARD:

Any agent that has a harmful effect on the adult male or female reproductive system or the developing fetus or child.

ROUTES OF ENTRY:

Means by which material may gain access to the body (inhalation, ingestion, skin contact, injection).

S**SENSITIZER:**

Substance which, on first exposure, causes little or no reaction in man or test animals but which, on

repeated exposure, may cause a marked response not necessarily limited to the contact site.

SPECIFIC GRAVITY:

Weight of material compared to equal volume of water; expression of density of material.

STEL:

Short-term exposure limit.

SYSTEMIC EFFECTS:

Acute or chronic adverse health effects which occur in parts of the body removed from the site of exposure to the material.

T**TARGET ORGAN TOXIN:**

Toxic substance that attacks a specific organ of the body.

TERATOGEN:

Substance or agent to which exposure of a pregnant female can result in malformation in the fetus.

THRESHOLD LIMIT VALUE:

Airborne concentration of a material to which nearly all persons can be exposed day after day, without adverse effects. TLV's are expressed in 3 ways:

- **TLV-C:**
Ceiling limit, concentration that should not be exceeded even instantaneously.
- **TLV-STEL:**
Short term exposure limit, maximum concentration for a continuous 15-minute exposure period.
- **TLV-TWA:**
Time-weighted average, concentration for a normal 8-hour work day or 40-hour work week.

U

UPPER EXPLOSIVE (FLAMMABLE) LIMIT (UEL):

Highest concentration (highest percentage of the substance in air) that will produce a flash of fire when an ignition source (heat, electric arc, or flame) is present.

V

VAPOR DENSITY:

Weight of vapor or gas compared to an equal volume of air; expression of the density of the vapor or gas.

VAPOR PRESSURE:

Pressure exerted by a saturated vapor above its liquid in a closed container. Important facts to remember:

- Vapor pressure of a substance at 100° F will always be higher than the vapor pressure of the substance at 60° F.
- Vapor pressure reported on MSDS's in mmHg are usually very low pressures; 760 mmHg is equivalent to 14.7 psi.
- The lower the boiling point of a substance, the higher its vapor pressure.

VOLATILE ORGANIC COMPOUNDS (VOC):

Used in coatings and paint because they evaporate very rapidly.

W

WATER REACTIVE:

Material that reacts with water to release a gas that is either flammable or presents a health hazard.