

Hazard Communication Glossary

A

ACGIH: Abbreviation for the American Conference of Governmental Industrial Hygienists, a private organization of occupational safety and health professionals. The ACGIH recommends occupational exposure limits for many hazardous substances, and it updates and revises its recommendations as more information becomes available. ACGIH limits are not legally enforceable.

ACUTE (SHORT-TERM) EXPOSURE: Acute exposure is a single, brief contact with a toxic substance, and effects, if any, will appear soon after the exposure. Acute effects vary greatly with the type of substance and the dose. For example; contact with a small amount of ammonia gas in air can cause throat and eye irritation, whereas inhaling high amount of ammonia gas might be fatal.

Many acute effects are reversible. This means that they will lessen or disappear soon after exposure stops. Contact with very dilute ammonia gas will cause eye irritation and tearing. When the ammonia source is removed, the tearing will generally stop.

AUTOIGNITION TEMPERATURE: See IGNITION TEMPERATURE.

B

BOILING POINT: The temperature a liquid must be at in order to make it boil. “Boiling” is when a liquid converts it from a liquid-state to a gaseous-state (e.g., vapor). The boiling point of a liquid will vary according to the atmospheric pressure to which the liquid is exposed.

C

CARCINOGENS: Chemicals that may cause cancer.

CEILING LIMIT: An employee-exposure limit for airborne contaminants, that is independent of exposure time and not to be exceeded.

CHRONIC (LONG-TERM) EXPOSURE: Chronic exposure consists of repeated contact over a period of time. Well-known chronic exposures include inhalation of tobacco (which adversely affects the lungs and upper respiratory system) and ingestion of alcohol (which adversely affects the liver). Some chronic effects are considered reversible while others are irreversible (i.e., they do not lessen or disappear when exposure ceases). Severe chronic overexposure to hexane may cause tingling in the extremities and pain in the joints. These symptoms disappear when the exposure is removed. On the other hand, inhalation of asbestos over time may cause the lung disease “Asbestosis.” Once incurred, Asbestosis is permanent, regardless of whether future exposure stops or decreases. For many chemical and physical hazards, the effects of chronic exposure are unknown and, therefore, unpredictable.

COMBUSTIBLE: Can burn.

COMBUSTIBLE LIQUID: Liquids with flashpoints between 100 degrees Fahrenheit and 200 degrees Fahrenheit.

CONCENTRATION: The amount of a gaseous, liquid or solid substance that is present in a mixture or solution. Concentration is often expressed at a ratio or percentage.

COMPRESSED GAS: Any gas at 40 psia or greater is considered to be a hazardous material.

CORROSIVES: A chemical that can cause burns and destruction of unprotected skin and other tissues. Examples include muriatic acid and sodium hydroxide.

CUTANEOUS HAZARDS: Chemicals which may cause drying, itching, and reddening of the skin. Examples include detergents and hydrocarbon solvents.

D

DENSITY: The weight of a given volume of a substance. Gold is a very dense substance with a small amount weighing a lot. Plastic foams have low densities with a large volume weighing very little. The density of a substance is usually compared with water, which has a density of 1.0. Substances with densities less than 1.0 will float on water if they don't dissolve; substances with densities greater than 1.0 will sink in water if they don't dissolve.

DERMAL: By or through the skin.

E

EVAPORATION RATE: How fast a liquid evaporates compared to some other chemical, typically butyl acetate. The higher the number, the more rapidly the liquid evaporates.

EXPLOSIVES: Chemicals that may explode or detonate, releasing large quantities of hot gases. One commonly known example is TNT (dynamite). Some ordinarily inert materials such as flour dust, if confined and in sufficient quantity, will explode in the presence of an ignition source. Most flammable vapors and gases, if present in sufficient quantity, subjected to confinement, and exposed to an ignition source will explode. Explosion is the rapid combustion, accompanying pressure increase, and expansion that results from the ignition of a substance that is present in concentration between its Lower Explosive Limit and Upper Explosive Limit (in air).

EXPLOSIVE LIMIT: The amount of a gas, vapor or particulate in air that forms an explosive mixture. "Explosive Limits" refers to the LOWER EXPLOSIVE LIMIT (LEL) and UPPER EXPLOSIVE LIMIT (UEL), and is different for different materials. The difference between the two limits is the range of material concentrations, in air, that is sufficient to cause explosion in the presence of an ignition source. Explosive limits are usually expressed as a percentage of a gas/vapor in air, or a ratio of the weight of particulate to a given volume of air.

EYE IRRITANTS: Chemicals that irritate the eyes.

F

FLAMMABLE: Catches on fire easily and burns rapidly.

FLAMMABLE GASES/VAPORS: Gases or vapors that will likely explode or burn when exposed to an ignition source.

FLAMMABLE LIMITS: See EXPLOSIVE LIMITS. Flammable Limits are similar in concept to Explosive Limits. They represent the lower and upper amounts (i.e., range) of material in mixture with air that will burn. It is possible for a mixture to have too little or too much air/material to support combustion, in which case the mixture is considered to be outside of its Flammable Limits.

FLAMMABLE LIQUIDS: Liquids with a flash point below 100 degrees Fahrenheit. Even a small low energy spark like static electricity might ignite vapors that can evaporate readily under normal temperatures.

FLAMMABLE SOLIDS: Solids that ignite very easily and burn intensely. Their dusts are a special problem since they may explode if mixed with air and ignited.

FLASH POINT: The lowest temperature at which a liquid gives off enough vapor to catch on fire if heat is applied. Flash point provides an indication of how flammable a substance is. Not to be confused with IGNITION TEMPERATURE.

G

GRAM: The unit of weight in the metric system. An ounce is about 28 grams, and a pound is approximately 450 grams. (A teaspoon of sugar weighs about 8 grams.)

H

HAZARDOUS POLYMERIZATION: See POLYMERIZATION.

HEALTH HAZARD: Anything that may have a harmful effect on health if overexposure occurs. There can be both *ACUTE* and *CHRONIC* health hazards.

HEMATOPOIETIC AGENTS: Chemicals that affect the blood or blood-forming system.

HEPATOTOXINS: Chemicals that affect the liver.

HIGHLY TOXIC CHEMICALS: Chemicals which are poisonous in extremely small doses. Examples are hydrogen cyanide gas and beryllium particles.

I

IGNITION TEMPERATURE: The lowest temperature at which a substance will burst into flames without a source of ignition like a spark or flame. The lower the ignition temperature, the more likely the substance is going to be a fire hazard.

INFLAMMABLE: Same as FLAMMABLE.

INGESTION: Swallowing.

IRRITANTS: Chemicals that may cause reddening, swelling and pain, but are not likely to cause tissue destruction.

K

KILOGRAM: 1000 grams. One kilogram equals about 2.2 pounds.

L

LC50: The concentration of a substance, in air, that killed 50% of the test animals that were exposed by inhalation. LC50 is a measure of acute toxicity.

LD50: The concentration of a substance that killed 50% of the test animals that were exposed by ingestion. the substance. LD50 is a measure of acute toxicity.

LEL: See EXPLOSIVE LIMITS.

LITER: The unit of volume in the metric system. A liter is slightly larger than a quart.

M

MELTING POINT: The temperature that a solid must be heated to in order to make it melt.

METER: The unit of length in the metric system. A meter is about 40 inches.

mg/kg: A way of expressing dose: milligrams (mg) of a substance per kilogram (kg) of body weight. A dose of one mg/kg is equal to 1/1,000,000th of the test animal's body weight.

mg/m³: A way of expressing the concentration of a substance in air; milligrams (mg) of substance per cubic meter (m³) of air. For comparison, a fingerprint weighs about 1 mg and a m³ is slightly larger than a cubic yard (yd³).

MILLIGRAM: 1/1000 of a gram.

mmHg: A unit of pressure measurement equal to 2/100 of a pound per square inch (psia).

MUCOUS MEMBRANE IRRITANTS: Chemicals which irritate the mucous membranes such as those found in the nose and throat.

MUTAGENS: Chemicals which may change sperm or egg cells in such a way that defective offspring may be conceived.

N

NEPHROTOXINS: Chemicals that affect the kidneys.

NEUROTOXINS: Chemicals which affect the central nervous system causing dizziness, confusion, and unconsciousness; much like that experienced when a person drinks too much alcohol.

NIOSH: Abbreviation for the National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services. NIOSH does research on occupational safety and health questions and makes recommendations to OSHA.

NON-FLAMMABLE GASES: Gases that present no fire hazard. However, they share a hazard with all gases stored in compressed gas cylinders in that if the pressure is relieved in an uncontrolled manner, such as the breaking of a valve, they can become projectiles similar to a rocket. They may also dilute the air causing asphyxiation.

O

ODOR THRESHOLD: The lowest concentration of a substance's vapor, in air, that can be smelled. Odor thresholds are highly variable depending on the individual who breathes the substance and the nature of the substance.

ORGANIC PEROXIDES: Chemicals containing oxygen atoms that are bonded to other oxygen atoms. Organic peroxides are very unstable and may act either as reactive oxidizers or explosives.

OSHA: Abbreviation for the Occupational Safety and Health Administration, U.S. Department of Labor. OSHA develops and enforces federal standards for occupational safety and health.

OXIDIZERS: Chemicals which contain a large amount of oxygen and may cause the ignition of combustible materials without the aid of an external source of ignition; or which, when mixed with combustible materials and ignited, increases the rate of burning.

P

PEL: Abbreviation for Permissible Exposure Limit. The OSHA enforceable average or ceiling exposure limit for a chemical.

pH: A measure of how acidic or how caustic (basic) a substance is on a scale of 1–14. A pH of 1.0 indicates that a substance is very acid. A pH of 7.0 indicates that a substance is neutral. A pH of 14.0 indicates that a substance is very caustic (basic). The farther a substance's pH is from neutral (in either direction), the more harmful it is upon skin/eye contact.

PHYSICAL HAZARD: A hazard posed by a physical hazard which is not directly related to health. Examples include flammability, water-reactivity, noise, radiation, and hot environments.

POLYMERIZATION: A chemical reaction in which individual molecules combine to form a single, large molecule called a "polymer." Usually, heat is released during the polymerization process.

PPM: Parts per million. A ratio used to express small concentrations of a gas or vapor in a mixture (usually in air). 1.0 ppm would be analogous to 1 inch in 15.78 miles.

PULMONARY AGENTS: Chemicals that may affect the lungs.

PYROPHORIC: *See* SPONTANEOUSLY COMBUSTIBLE MATERIALS.

R

REACTIVITY: The ability of a substance to undergo change, usually by combining with another substance or decomposing chemically. Certain conditions, such as heat, light and/or moisture may cause a substance to become more reactive. Highly reactive substances might become unstable and explode.

REPRODUCTIVE TOXINS: Chemicals that cause cell mutations are called “mutagens.” Chemicals that cause birth defects are called “teratogens.” Some reproductive toxins can cause sterility and other effects to the reproductive system.

S

SOLUBILITY: The amount of a liquid or solid substance that can be dissolved in a solvent, usually water (to create a solution).

SOLVENT: Usually, a liquid in which other substances are dissolved. The most common solvent is water.

SPECIFIC GRAVITY: The specific gravity of a liquid is a measurement of how much a given volume of the liquid weighs compared to the same volume of water. Liquids with a specific gravity greater than 1 are heavier than water. Liquids with a specific gravity less than 1 are lighter than water.

SPONTANEOUSLY COMBUSTIBLE MATERIALS: Chemicals that, when exposed to air, will burn without the presence of an external ignition source.

STABILITY: The stability of a chemical is a measure of how likely it is the chemical may begin to react on its own. Unstable chemicals may react or explode if stored too long, warmed too much, or otherwise improperly handled. An example is nitrogen-based fertilizer, if contaminated with water or fuel oil.

SUSPECT CARCINOGEN: A substance that is suspected of causing cancer in humans or animals but has not necessarily been proven to do so.

T

TERATOGENS: Chemicals that may cause birth defects.

THERMAL: Involving heat.

TLV: “Threshold Limit Values” (TLVs) are established by the American Conference of Governmental Industrial Hygienists (ACGIH) and represent the time-weighted-average occupational exposure limits for chemicals and physical hazards. Usually, TLVs are established for an 8-hour work shift. During the work shift, the actual exposure level at any point in time may be higher or lower than the TLV, but the average exposure for the entire shift must not exceed the TLV. TLVs represent average, full-shift exposure levels to which the general working population should be able to tolerate without experiencing adverse health effects. In addition to 8-hour TLVs, the ACGIH publishes Short Term Exposure Levels (averaged over a 15-minute exposure time) and Ceiling Levels (which should never be exceeded).

TOXIC CHEMICALS: Any chemical that can cause acute or chronic injury to the human body.

U

UEL: See EXPLOSIVE LIMITS.

V

VAPOR: The gas that is given off by a liquid when it evaporates. Some solids, such as naphthalene, can also emit vapors when it evaporates.

VAPOR DENSITY: The density of the vapor given off by a substance. It is usually compared with air, which has a vapor density set at 1. If the vapor is more dense than air (i.e., greater than 1.0), it will sink to the ground; if it is less dense than air (less than 1.0), it will rise. An example is LP-Gas vapor (in air), which will seek the lowest available level if the air currents are still.

VAPOR PRESSURE: A measure of the ease with which a liquid evaporates. The higher the vapor pressure, the more rapidly a liquid will evaporate into the air. Vapor pressure is measured in “mm/Hg.” 1.0 mm/Hg (milligrams of mercury) equals approximately 0.2 pound per square inch (psia).

VENTILATION: Ventilation refers to mechanically moving the air to dilute or remove solid or gaseous contaminants. Local exhaust involves placing hoods or suction devices right at the source of chemical contaminant. General exhaust involves the use of roof fans or wall fans in conjunction with passive or mechanical make-up air provisions. Desired air movement is achieved by either negative-pressure (e.g., suction to remove and transport contaminant) or mechanically-induced positive-pressure (e.g., mechanical systems that dilute and/or displace contaminant).

VISCOSITY: A relative measure of how slowly a substance pours or flows. Very viscous substances, like molasses, pour very slowly. Slightly viscous substances, like water, pour and splash easily.

VOLATILITY: A measure of how quickly a substance forms vapor and evaporates at ordinary temperatures.

W

WATER REACTIVE CHEMICALS: Chemicals that share the characteristics of a flammable solid. However, in addition, they can react with water to give off either a poisonous gas or a flammable gas. Examples are magnesium metal and picric acid.