Glossary of Chemical Terms

Acid – A substance that dissolves in water and releases hydrogen ions (H+); acids cause irritation, burns, or more serious damage to tissue, depending on the strength of the acid, which is measured by pH.

Acute Toxicity – Adverse effects resulting from a single dose, or exposure to a substance for less than 24 hours.

Asphyxiant – A substance that interferes with the transport of an adequate supply of oxygen to the body by either displacing oxygen from the air or combining with hemoglobin, thereby reducing the blood's ability to transport oxygen.

Base – A substance that dissolves in water and releases hydroxide ions (OH-); bases cause irritation, burns, or more serious damage to tissue, depending on the strength of the base, which is measured by pH.

Carcinogen – A substance that causes cancer.

CAS Registry Number – An internationally recognized unique registration number assigned by the Chemical Abstracts Service to a chemical, a group of similar chemicals, or a mixture.

Chemical Hygiene Plan – A written program that outlines procedures, equipment, and work practices that protect employees from the health hazards present in the workplace.

Chronic Toxicity – Adverse effects resulting from repeated doses of, or exposures to, a substance by any route for more than three months.

Combustible Liquid – A liquid with a flashpoint at a temperature lower than the boiling point; according to the National Fire Protection Association and the U.S. Department of Transportation, it is a liquid with a flash point of 100*F (37.8*C) or higher.

Compatible Materials – Substances that do not react together to cause a fire, explosion, violent reaction, or lead to the evolution of flammable gases or otherwise lead to injury to people or danger to property.

Compressed Gas – A substance in a container with an absolute pressure greater than 276 kilopascals (kPa) or 40 pounds per square inch (psi) at 21*C, or an absolute pressure greater than 717 kPa (40psi) at 54*C.

Corrosive – A substance capable of causing visible destruction of, and/or irreversible changes to living tissue by chemical action at the site of contact (i.e. strong acids, strong bases, dehydrating agents, and oxidizing agents).

Environmental Protection Agency (EPA) – U.S. Federal agency that regulates the labeling and transportation of hazardous materials.

Explosive – A substance that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

Federal Hazardous Substance Act (FHSA) – The Federal Hazardous Substances Act (15 U.S.C 1261-1278), administered by the Consumer Product Safety Commission, requires that certain household products that are "hazardous substances" bear cautionary labeling to alert consumers to potential hazards that those products present and inform them of the measures they need to protect themselves from those hazards. Any product that is toxic, corrosive, flammable, or combustible, an irritant, a strong sensitizer, or generates pressure through decomposition, heat, or other means requires labeling, if the product may cause substantial personal injury or illness during or as a proximate result of any customary or reasonable foreseeable handling or use, including reasonable foreseeable ingestion by children.

Flammable – As defined by the FHSA regulations at 16 CFR – 1500.3 (c)(6)(ii), a substance having a flashpoint above 20*F (-6.7*C) and below 100*F (37.8*C). An extremely flammable substance, as defined in the FHSA regulations at 16 CFR - 1500.3 (c)(6)(i), is any substance with a flashpoint at or below 20*F (-6.7*C).

Flashpoint – The minimum temperature at which a liquid or solid produces vapor near its surface sufficient to form an ignitable mixture with the air; the lower the flashpoint, the easier it is to ignite the material.

Hazardous Substance – As defined in the Federal Hazardous Substances Act (FHSA) at 16 CFR – 1500.3 (b)(4)(i)(A), any substance or mixture of substances that is toxic, corrosive, an irritant, a strong sensitizer, flammable or combustible, or generates pressure through decomposition, heat or other means, if it may cause substantial personal injury or illness during or as a proximate result of any customary or reasonably foreseeable handling or use, including reasonably foreseeable ingestion by children.

Hepatotoxin – A chemical that can cause liver damage.

Incompatible Materials – Substances that can react to cause a fire, explosion, violent reaction, or lead to the evolution of flammable gases or otherwise lead to injury to people or danger to property.

Mutagen – A substance capable of changing genetic material in a cell.

National Fire Protection Agency (NFPA) – An organization that provides information about fire protection and prevention and developed a standard outlining a hazard-warning labeling system that rates the hazard(s) of a material during a fire (health, flammability, and reactivity hazards).

National Institute for Occupational Safety and Health (NIOSH) – U.S. Federal agency of the Centers for Disease Control and Prevention (CDC) that investigates and evaluates the potential hazards in the workplace. NIOSH is also responsible for conducting research and providing recommendations for the prevention of work-related illness and injury.

Neurotoxin – A substance that induces an adverse effect on the structure and/or function of the central and/or peripheral nervous system.

Occupational Safety and Health Administration (OSHA) – U.S. Federal Agency that develops and enforces occupational safety and health standards for all general, as well as, construction and maritime industries and businesses in the U.S.

Oxidizer – A substance that causes the ignition of combustible materials without an external source of ignition; oxidizers can produce oxygen, and therefore support combustion in an oxygen free atmosphere.

Peroxide Former – A substance that reacts with air or oxygen to form explosive peroxy compounds that are shock, pressure, or heat sensitive.

Permissible Exposure Limit (PELs) – The legally enforceable maximum amount or concentration of a chemical that a worker may be exposed to under OSHA regulations.

pH – A measure of the acidity or basicity (alkalinity) of a material when dissolved in water; expressed on a scale from 0 to 14.

Radioactive Material – A material whose nuclei spontaneously give off nuclear radiation.

Reactivity – The capacity of a substance to combine chemically with other substances.

Reproductive Toxicity – Adverse effects on sexual function and fertility in adult males and females, as well as developmental toxicity in the offspring (International Programme on Chemical Safety (IPCS) Environmental Health Criteria 225, *Principles for Evaluating Health Risks to Reproduction Associated with Exposure to Chemicals).*

Secondary Containment – An empty chemical-resistant container/dike placed under or around chemical storage containers for the purpose of containing a spill should the chemical container leak.

Systemic – Affecting many or all body systems or organs; not localized in one spot or area.

Teratogen – A substance which may cause non-heritable genetic mutations or malformations in the developing embryo or fetus when a pregnant female is exposed to the substance.

Toxic Substance – In general, as defined in the FHSA regulations at 16 CFR – 1500.3 (b)(5), any substance (other than a radioactive substance) which has the capacity to produce personal injury or illness to man through ingestion, inhalation, or absorption through any surface of the body.

This term is further defined by OSHA and the FHSA regulations:

As defined by OSHA (Appendix A of 29CFR 1910.1200), a substance with either, a median lethal dose (LD50) of more than 50mg/kg but not more than 500 mg/kg of body weight administered orally, a median lethal dose (LD50) of more than 200 mg/kg but not more than 1000mg/kg of body weight when administered by continuous contact with the bare skin of rabbits, or a median lethal concentration (LC50) in air of more than 200 parts per million but not more than 2000 parts per million by volume of gas or vapor, or more than 2 mg/L but not more than 20 mg/L of mist, fume, or dust when administered by continuous inhalation for one hour.

As defined by the FHSA regulations at 16 CFR – 1500.3(c)(2)(i), a substance with either, a median lethal dose (LD50) of 50 mg/kg to 5000 mg/kg of body weight administered orally to rats, a median lethal dose (LD50) of more than 200 mg/kg but not more than 2000 mg/kg of body weight when administered by continuous contact with bare skin of rabbits for 24 hours, or a median lethal concentration (LC50) in air of more than 200 parts per million but not more than 20000 parts per million by volume of gas or vapor, or more than 2mg/L but not more than 200mg/L by volume of mist or dust, when administered by continuous inhalation for one hour or less.

Water Reactive Material – A substance that reacts with water that could generate enough heat for the item to spontaneously combust or explode. The reaction may also release a gas that is either flammable or presents a health hazard.

Source: NIOSH SAFELabs