

Center for Dairy Farm Safety - Glossary of Terms

ACGIH—American Conference of Governmental Industrial Hygienists. A professional organization devoted to worker health protection. In particular, the organization publishes "Threshold Limit Values for Chemical Substances in the Work Environment" and the "Documentation of TLVs." The TLV booklet is one source which may be used in hazard determination. www.acgih.org.

ANSI—American National Standards Institute. ANSI is a coordinating body of various trade, technical, professional, and consumer groups who develop voluntary standards. www.ansi.org

Acute—An adverse effect on the human body with symptoms of high severity coming quickly to a crisis. Acute effects are normally the result of short term exposures and short duration.

Aerosol—This is a solid or liquid particulate, natural or manmade, which can remain suspended in air. Paint spray and smoke are examples of aerosols.

Asphyxiant—A chemical, usually in a gas or vapor state, which displaces oxygen or prevents its use in the body by other chemical means.

Assistant Secretary (OSHA)—"...means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee."

Autoignition temperature—This is the lowest temperature at which a substance will ignite and sustain combustion in the absence of an ignition source.

Blood Agents—These are chemicals such as carbon monoxide and the cyanides which act on the blood and the hematopoietic system and ultimately result in depriving body tissues of adequate oxygen.

Boiling point—The temperature at which a liquid changes its physical state to a gas. Toluene has a boiling point of 231°F.

CAS Number—The CAS Number is an identification number assigned by the Chemical Abstracts Service (CAS) of the American Chemical Society. The CAS Number is used in various databases, including Chemical Abstracts, for identification and information retrieval.

CFR—Code of Federal Regulations. This is the collection of rules and regulations originally published in the Federal Register by various governmental departments and agencies. OSHA regulations are found in 29 CFR; EPA regulations are in 40 CFR; and Department of Transportation regulations in 49 CFR.

Carcinogen—A carcinogen is a substance which causes cancer. A cancer is characterized by the proliferation of abnormal cells, sometimes in the form of a tumor. Examples of carcinogens include asbestos, vinyl chloride, and benzene.

Ceiling (ACGIH)—The Threshold Limit Value Ceiling (TLV-C) is "...the concentration that should not be exceeded during any part of the working exposure."

Chemical (OSHA)—OSHA's definition of chemical "means any element, chemical compound or mixture of elements and/or compounds."

Chemical Abstracts Service—SEE CAS NUMBER.

Chemical inventory—The inventory is "A list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate material safety data sheet (the list may be compiled for the workplace as a whole or for individual work areas)."

Chronic—An adverse effect on the human body with symptoms which develop slowly over a long period of time or which frequently recur. Chronic effects are the result of long term exposure and are of long duration.

Combustible liquid (OSHA)—"...means any liquid having a flashpoint at or above 100°F (37.8°C), but below 200°F (93.3°C), except any mixture having components with flashpoints of 200°F (93.3°C) or higher, the total volume of which make up 99 percent or more of the total volume of the mixture."

Compliance—This is the state of meeting all the requirements of the law. The best way to be assured of being in compliance with OSHA is to be familiar with OSHA's expectations.

Confined space "Confined space" means a space that:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work
2. Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited

means of entry.)

3. Is not designed for continuous employee occupancy.

Consumer products—Consumer products and hazardous substances as defined by the Consumer Product Safety Act are not subject to the labeling requirements of the Hazard Communication Standard when they are regulated under the Consumer Product Safety Act.

Container (OSHA)—"...means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes and piping systems are not considered to be containers." Please note that some state right to know laws do consider pipes 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 four hours.

Cutaneous hazards—A chemical which affects the dermal layer of the body by causing rashes, irritation, or defatting of the skin. Examples include ketones and chlorinated compounds.

DHHS—Department of Health and Human Services.

DOL—Department of Labor.

DOT—Department of Transportation.

Decomposition—Chemical breakdown of a material brought on by some adverse condition.

Degradation—This is the destructive effect a chemical may have on a piece of chemical protective clothing. Protective clothing that has been degraded may be partially dissolved, softened, hardened, or completely destroyed. If not destroyed, the material may have reduced strength and flexibility. This may result in easy tearing or punctures, opening up a direct route to skin contact by penetration.

Density—The density of a substance is a number which relates its weight to its volume. Density values in references are given in grams/cubic centimeter (g/cc). The densities of solids and liquids are usually compared to the density of water. The density of water is

1. Substances with a density greater than 1 sink in water and those less than 1 float. Lead has a density of 11.35 g/cc. Toluene has a density of 0.86 g/cc.

Dermal—Relating to the skin.

Designated representative (OSHA)—"...means any individual or organization to whom an employee gives written authorization to exercise such employee's rights under this section. A recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization."

Director (OSHA)—"...means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee." The Director may access upon request, the following documents: Written methods and procedures used to determine the hazards of chemicals under evaluation, Company Hazard Communication Program, Material Safety Data Sheets.

Documentation—Documentation is the record of compliance that a company should maintain. The Hazard Communication Law requires that certain requirements be met including employee information and training. Complete training record should be kept to prove compliance in the event of an inspection. Other areas where documentation should be maintained include the written program, MSDS maintenance, hazard determination, and quality assurance audits.

EPA—Environmental Protection Agency. Responsible for enforcing regulations related to the Resource Conservation and Recovery Act, Toxic Substance Control Act, Superfund, and others.

Evaporation rate—A measure of the length of time required for a given amount of a substance to evaporate, compared with the time required for an equal amount of ether or butyl acetate to evaporate. The evaporation rate of toluene is 2.24 (butyl acetate = 1).

Exposed (OSHA)—"...means that an employee is subjected to a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption, etc.), and includes potential (e.g., accidental or possible) exposure.

FDA—Food and Drug Administration. Responsible for enforcing regulations issued under the Federal Food, Drug, and Cosmetic Act.

FIFRA—Federal Insecticide, Fungicide, and Rodenticide Act. Labeling is not required for any pesticide as defined in FIFRA when subject to labeling regulations by EPA under FIFRA.

Farm field equipment—means tractors or implements, including self-propelled implements, or any combination thereof used in agricultural operations.

Farmstead equipment —means agricultural equipment normally used in a stationary manner. This includes, but is not limited to, materials handling equipment and accessories for such equipment whether or not the equipment is an integral part of a building.

Flammable (OSHA)—"...means a chemical that falls into one of the following categories:" flammable, flammable gas, flammable liquid, flammable solid.

Flammable aerosol (OSHA)—"...an aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back at the valve) at any degree of valve opening." This is one category of chemical which OSHA considers flammable.

Flammable gas (OSHA)—"...means: (a) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent by volume or less; or (b) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent of volume, regardless of the lower limit."

Flammable limits—The range defined by the lower (LFL) and upper (UFL) flammability limit. May sometimes be referred to as explosive limits (LEL & UEL) in other sources of information. This is the range of concentrations in air that may readily ignite when exposed to a flame or spark.

Flammable liquid (OSHA)—"...means any liquid having a flashpoint below 100°F (37.8°C), except any mixture having components with flashpoints of 100°F (37.8°C) or higher, the total of which make up 99 percent or more of the total volume of the mixture."

Flammable solid (OSHA)—"...means a solid, other than a blasting agent or explosive as defined in section 1910.109(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and

persistently as to create a serious hazard. A chemical shall be considered to be a

flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis."

Flashpoint (OSHA)—"...means the minimum temperature at which a liquid gives off vapor in sufficient concentration to ignite when tested as follows: (i) Tagliabue Closed Tester; or (ii) Pensky–Martens Closed Tester; or (iii) Setaflash Closed Tester."

Foreseeable emergency (OSHA)—"...means 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." This definition refers to 29 CFR 1910.1200 (b)(2): "This section applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency."

Hazard Communication Standard—The purpose is to reduce and eliminate adverse health effects due to unnecessary exposures to hazardous chemicals. Hazard communication is achieved by recognition and evaluation of workplace hazards, accurate labeling of hazards, and effective training of employees about proper handling and use of those hazardous materials in the workplace. The OSHA Hazard Communication Standard describes how employers are to inform employees of workplace chemical hazards. The OSHA Standard is enforced under the regulations found in 29 CFR 1910.1200.

HMIS—Hazardous Materials Identification System. This is an integrated approach to working with hazardous materials. The system includes information on assessing hazards, labeling and training. It was devised by the National Paint and Coatings Association.

Hazard determination—This is the evaluation of a chemical to determine if it is hazardous. OSHA considers a chemical hazardous if it is a physical hazard or a health hazard. Chemical manufacturers and importers must complete this evaluation by the guides in the law. Employers are not required to perform a hazard determination.

Hazard warning (OSHA)—"...means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the hazards of the chemical(s) in the container(s)." A hazard warning is one of the types of information required on a container.

Hazardous chemical (OSHA)—"...means any chemical which is a physical hazard or a health hazard."

Health hazard (OSHA)—"...means a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term 'health hazard' includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes. Appendix A of 1910.1200 provides further definitions and explanations of the scope of health hazards covered by this section, and Appendix B of 1910.1200 describes the criteria to be used to determine whether or not a chemical is to be considered hazardous for purposes of this standard." SEE definitions of the above listed terms in this glossary.

Hepatotoxins (Appendix A 1910.1200)—Chemicals which cause liver damage such as liver enlargement or dysfunction. Examples include nitrosamines and carbon tetrachloride.

Highly toxic (Appendix A 1910.1200)—"A chemical falling within any of the following categories: (a) A chemical that has a median lethal dose (LD50) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each. (b) A chemical that has a median lethal dose (LD50) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rats weighing between two and three kilograms each. (c) A chemical that has a median lethal concentration (LC50) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each."

Immediate use (OSHA)—"...means that the 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." Employers are not required to label containers designated for an

Ingestion—Chemicals which enter the body by this route of entry may have local effects and/or may be absorbed into the bloodstream through the small intestine.

Inhalation—Chemicals which enter the body by this route of entry may have local effects and/or may be absorbed into the bloodstream through the lungs.

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

Inventory—A list or inventory of hazardous chemicals known to be present in the workplace is a required component of the written hazard communication program. This list is to be cross referenced with the MSDS and the label.

Irritant (Appendix A 1910.1200)—"A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 CFR 1500.41 for four hours exposure or by other appropriate techniques, it results in an empirical score of five or more. A chemical is an eye irritant if so determined under the procedure listed in 16 CFR 1500.42 or other appropriate techniques."

Job Hazard Analysis (JHA)—This is a process by which a job is studied to determine the hazards involved and ways to safely complete the job by procedures and/or personal protective equipment. Sometimes known as Job Safety Analysis or JSA.

LC50—Lethal concentration 50. This is the concentration in air of a toxic substance that was required to cause the death of half the test animal population under controlled administration. This evaluates inhalation as a potentially harmful route of entry. LC50 data is used to assess the toxicity of a chemical.

LD50—Lethal dose 50. This is the dose or amount of toxic substance that was required to cause death in half the test animal population under controlled administration. Either ingestion or skin contact may be evaluated. LD50 data is used to assess the toxicity of a chemical.

Label (OSHA)—"...means any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals." Containers in the workplace must be labeled, tagged or marked with the following information: Identity of hazardous chemical and appropriate hazard warnings. In addition, containers leaving the workplace must also have the name and address of the responsible party (manufacturer or importer).

Language requirements—All labels and other forms of warning are to be in English. The label may also present the information in a different language in addition to English.

Lung agents (Appendix A 1910.1200)—Chemicals which irritate or damage lung tissue. Examples include asbestos, silica.

MSDS (OSHA)—"Material safety data sheet means written or printed material concerning a hazardous chemical which is prepared in accordance with paragraph (g) of this section." Information such as hazards, personal protective equipment, and emergency procedures is the type of information required on MSDSs.

Manufacturing purchaser (OSHA)—"...means an employer with a workplace classified in SIC Codes 20 through 39 who purchases a hazardous chemical for use within that workplace." The term is used in regard to obtaining MSDSs in (g) of the law.

Medical surveillance—Many of the chemicals that are regulated by OSHA have requirements that the employer conduct medical surveillance on employees to assure that chemical exposure is within the acceptable limits.

Melting point—This is the temperature at which a solid changes state to a liquid. The melting point of toluene is -139°F.

Mutagen—A substance which causes genetic mutations.

NFPA—National Fire Protection Association. NFPA is a non-profit organization which provides information on fire protection and prevention. Among the publications the NFPA develops is the 704 Standard for the Identification of the Fire Hazards of Materials. This publication describes a hazard warning system suitable for labels on containers.

NIOSH—National Institute for Occupational Safety and Health. NIOSH is involved in research on health effects due to workplace exposures. Research is used to make recommendations for reducing or preventing worker exposures. NIOSH is also responsible for testing and certifying respirators. See www.cdc.gov/niosh.

Nephrotoxins (Appendix A)—Chemicals which cause damage to the kidneys. Trichloroethylene is an example of a nephrotoxin.

Neurotoxins (Appendix A 1910.1200)—Chemicals which have their primary toxic effects on the central nervous system. Examples of neurotoxins include mercury and carbon disulfide.

OSHA—Occupational Safety and Health Administration. See www.osha.gov.

Oxidizer (OSHA)—"...means a chemical other than a blasting agent or explosive as defined in section 1910.109(a), that initiates or promotes combustion in other materials thereby causing fire either of itself or through the release of oxygen or other gases." The law considers an oxidizer to be a physical hazard.

Oxidizing agent—A chemical which gives off free oxygen in a chemical reaction.

ppb—parts per billion.

ppm—parts per million.

psi—pounds per square inch.

PEL—Permissible Exposure Limit. The PEL refers to the maximum air contaminant concentration a worker can be exposed on a repeated basis without developing adverse effects. The PELs are listed in 29 CFR 1910.1000 Tables Z-1, Z-2, Z-3. ALSO SEE: CFR 29 Section 1910 Subpart Z.

Penetration—This is the passage of a chemical through an opening in a protective material. Holes and rips in protective clothing can allow penetration as can stitch holes, space between zipper teeth, and open jacket and pant cuffs.

Permeation—Permeation is the passage of a chemical through a piece of clothing on a molecular level. If a piece of clothing is permeated, the chemical may collect on the inside, increasing the chance of skin contact with that chemical. Permeation is independent of degradation. Permeation may occur even though the clothing may show no signs of degradation.

Physical Hazard (OSHA)—"...means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water-reactive." Any chemical which can be classified as a physical hazard is considered to be a hazardous chemical under the law.

Placard—A placard is a notice or poster placed in a hazardous work area that can be observed and read by workers. The placard can be attached to stationary process containers as long as it contains the same information as a label would carry.

Portable containers—Portable containers need not be labeled if they are for "immediate use."

RCRA—Resource Conservation and Recovery Act.

RTECS—Registry of Toxic Effects of Chemical Substances. This NIOSH publication is one of the information sources OSHA recommends for hazard determination. RTECS provides data on toxicity for over 50,000 different chemicals. It has an extensive cross reference listing trade names and synonyms. It is available as hard copy, computer tape, microfiche, and on-line through the National Library of Medicine.

Reactive (OSHA)—"...means a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature." Considered a physical hazard under the law.

Reactivity—A measure of the tendency of a substance to undergo chemical reaction with the release of energy.

Reproductive toxins (Appendix A 1910.1200)—Chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis). Examples of reproductive toxins include lead and DBCP.

Respirator use—Respirators are commonly used to protect workers from hazardous vapors and gases and particulates. There are respirators that remove hazards and those which supply the worker with air. Each type has limitations and advantages. Proper selection and use is essential to worker health. OSHA and ANSI provide guidance for respirator use.

Right to Know law—This is a term applied to a variety of laws and regulations enacted by municipal, county and state governments that provides for the availability of information on chemical hazards. This also includes the OSHA Hazard Communication Standard. The different laws that have been enacted around the country vary greatly from the OSHA Standard. Some require that information be made available not only to employees, but to emergency personnel and the community as a whole. Many of the local and state laws require submission of work area surveys as well as annual activity reports.

The basic intent of these laws is the same as the OSHA Standard.

SIC Codes—Standard Industrial Classification Codes. The SIC for Dairy Farms is 0241.

STEL—Short Term Exposure Limit. This is a term used by the ACGIH to denote "a 15-minute time-weighted average exposure which should not be exceeded at any time during a work day even if the eight hour time-weighted average is within the TLV." As with the TWA-TLV, the STEL is only a recommendation. ALSO SEE: **TLV**, **TWA**.

Sensitizer (Appendix A 1910.1200)—"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 chemicals."

Solubility—A measure of the amount of the substance that will dissolve in a given amount of water or other substance. Solubility data may be given in ppm or percent.

Specific gravity—The specific gravity is the comparison of densities between two different substances. Normally, the density of a substance is compared to the density of water, which is one.

Stability—A measure of the ability of a substance to be handled and stored without undergoing unwanted chemical changes.

TLV—Threshold Limit Value. The TLVs are a group of recommended concentrations established by the ACGIH for worker protection. They are based on toxicity data generated from human and animal studies and industrial experience. TLVs are only recommendations to industry, whereas OSHA enforces the PELs (Permissible Exposure Limits).

TSCA—Toxic Substances Control Act. TSCA provides for the evaluation of chemical substances before they are used in the workplace.

TWA—Time-weighted average. This type of Threshold Limit Value established by the ACGIH is "the time-weighted average concentration for a normal 8-hour day and 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect."

Target organ effects—Those effects which are recognized to be a result of exposure to a specific chemical.

Teratogen—A substance which causes birth defects as a result of exposure during fetal development.

Toxicity—The measure of the adverse effect exerted on the human body by a poisonous material.

Trade secret (OSHA)—"...means any confidential formula, pattern, process, device, information, or compilation (including chemical name or other unique chemical identifier) 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." Trade secret information is required to be divulged under certain circumstances as defined in section (i) of the Hazard Communication Standard. Circumstances include medical emergencies, and for occupational health evaluations.

Vapor density—This is the comparison of the density of a vapor or gas to the density of air (air = 1). A vapor density of less than 1 means it is lighter than air, and greater than 1 means it is heavier than air. Toluene has a vapor density of 3.14.

Water-reactive (OSHA)—"...means a chemical that reacts with water to release a gas that is either flammable or presents a health hazard."