WHMIS - Glossary

WHMIS - Glossary - N-Z

Note: This document explains common terms used in WHMIS. Not all terms are listed here. These definitions are not intended to be a legal interpretation of legislatively defined terms. For legal definitions, consult the *Hazardous Products Act* (HPA), the *Hazardous Products Regulations* (HPR), and the legislation in your jurisdiction.

This glossary has three parts:

Natural ventilation – see Ventilation.

NIOSH – NIOSH stands for National Institute for Occupational Safety and Health. NIOSH is a branch of the United States government. It is the mission of NIOSH to develop new knowledge in the field of occupational safety and health, and to transfer that knowledge into practice.

NOEL – NOEL stands for No Observable Effect Level.

NOS – NOS stands for Not Otherwise Specified.

NTP – NTP stands for National Toxicology Program. This program is part of the United States Department of Health and Human Services. The NTP has a program for testing the potential short-term and long-term health effects, including the carcinogenicity, of chemicals.

Occupational exposure limit values or exposure limits – the airborne concentration of a substance that must not be exceeded in workplace air within a specified amount of time. Exposure limits have various names and often have different numerical values in different jurisdictions. In most Canadian provinces and territories, the exposure limits are called Occupational Exposure Limits (OELs). (See also "Control parameters" and "Threshold limit values (TLV®s)".)

There are three different types of exposure limits in common use:

- **Time-weighted average (TWA)** exposure limit is the time-weighted average concentration of a chemical in air for a conventional 8-hour workday, 40 hours a week, to which nearly all workers may be exposed day after day without harmful effects. "Time-weighted average" means that the average concentration has been calculated using the duration of exposure to different concentrations of the chemical during a specific time period (usually 8 hours). In this way, higher and lower exposures are averaged over the day or week.

- **Short-term exposure limit (STEL)** is the average concentration to which workers can be exposed for a short period (usually 15 minutes) without harmful effects. ACGIH specifically defines the harmful effects as irritation, long-term or irreversible tissue damage, reduced alertness or other toxic effects. The number of times the concentration reaches the STEL and the amount of time between these occurrences can also be restricted.
- **Ceiling (C)** is the concentration which should not be exceeded at any time.

  Other OEL-related terms:

  "SKIN" notation (SKIN) means that contact with the skin, eyes and mucous membranes (e.g., the mouth) can contribute to the overall exposure. This notation indicates that measures should be used to prevent absorption by these routes, e.g., the use of protective gloves.

  Permissible Exposure Limit (PELs) are the legal occupational exposure limits in the United States set by the U.S. OSHA.

  Recommended Exposure Limits (RELs) are the occupational exposure limits set by the U.S. NIOSH.

Odour threshold – the lowest concentration of a product that most people can smell.

OECD – OECD stands for Organisation for Economic Cooperation and Development. The OECD has published "Guidelines for Testing of Chemicals." These guidelines contain recommended procedures for testing chemicals for toxic and environmental effects, and for determining physical and chemical properties.

OSHA – OSHA stands for Occupational Safety and Health Administration. It is the branch of the United States government which sets and enforces occupational health and safety legislation.

Organic peroxides – hazardous products classified in this hazard class are reactive and may cause a fire or explosion if heated. Organic peroxides are organic (carbon containing) liquids or solids that contain two oxygen atoms joined together (the bivalent -O-O structure).

Outer container – the most outward container of a hazardous product that is visible under normal conditions of handling, but does not include the most outward container if it is the only container of the hazardous product. See also "Container".

Oxidizing gases, Oxidizing liquids, Oxidizing solids – hazardous products classified in these hazard classes may cause or intensify a fire, or cause a fire or explosion. Oxidizing gases are liable to cause or contribute to the combustion of other materials more than air does. Oxidizing liquids and Oxidizing solids are liable to cause or contribute to the combustion of other materials.

Particles Not Otherwise Specified (PNOS) – a term defined by ACGIH® to describe particles that have little information available on them, do not have a TLV, are poorly soluble or insoluble in water and have low toxicity. (This term was previously called “particulates not otherwise classified (PNOC)" and/or nuisance dust/nuisance particulate). These substances are not to be considered inert (not of concern), however, and can produce general toxic effects depending on the airborne concentration. High levels of particles in the air may reduce visibility and can get into the eyes, ears, and nose, or may cause lung inflammation from "lung overload". Removal of some of these substances by washing or rubbing may cause irritation to the skin.

Partition coefficient – see "Coefficient of water/oil distribution".

PEL – See Occupational exposure limit values.

Personal protective equipment (PPE) – see “Individual protection measures”.

pH – a measure of a product’s acidity or alkalinity. A pH of 7 is neutral. Products with a pH of greater than 7 are alkaline (bases). Alkalinity increases as the number increases. Products with a pH of less than 7 are acidic (acids). Acidity increases as the number decreases.

Physical hazards not otherwise classified (PHNOC) – hazardous products classified in this hazard class present a physical hazard that is different from any other physical hazard addressed in the HPR. These hazards must have the characteristic of occurring by chemical reaction and resulting in the serious injury or death of a person at the time the reaction occurs. If a product is classified in this hazard class, the hazard statement on the label and safety data sheet (SDS) will describe the nature of the hazard.

Physical state – indicates whether a product is a solid, liquid or gas.

Pictogram – a graphical composition that includes a symbol along with other graphical elements, such as a border or background colour.

Precautionary statement – a phrase that describes the recommended measures to take in order to minimize or prevent adverse effects resulting from exposure to a hazardous product or resulting from improper storage or handling of a hazardous product.

Process enclosure – the operation in which the product used is completely enclosed. A physical barrier separates the worker from the potential health or fire hazard. Process enclosure is usually recommended if the product is very toxic or flammable.

Product identifier – the brand name, chemical name, common name, generic name or trade name of a hazardous product.

Pyrophoric gases – flammable gases that are liable (likely) to ignite spontaneously in air at a temperature of 54ºC or below. These hazardous products are now classified as part of the "Flammable gases" classification.

Pyrophoric liquids, Pyrophoric solids – hazardous products classified in these hazard classes can catch fire spontaneously (very quickly) if exposed to air. Pyrophoric liquids and Pyrophoric solids are liable (likely) to ignite within five minutes after coming into contact with air.

Polymerization – a chemical reaction that involves the combination of large numbers of simple molecules to form large chain-like macromolecules. This reaction can sometimes be observed as the “hardening” of a “non-inhibited” liquid product. Uncontrolled polymerization can be extremely hazardous. Some polymerization processes can release considerable heat, can generate enough pressure to burst a container, or can be explosive. Some chemicals can polymerize on their own without warning. Others can polymerize upon contact with water, air or other common chemicals. Inhibitors are normally added to products to reduce or eliminate the possibility of uncontrolled polymerization.

Reactivity – describes a product's intrinsic reactive properties, which can cause a dangerous release of heat, blast energy, toxic vapours, or gases that could rupture a container under normal or abnormal conditions. The information relates to the product's properties, resulting in reactions that fall outside the normal definitions of flammable or toxic and generally occur more rapidly than corrosion. Examples include organic peroxide, explosive, oxidizer, self-reactive, pyrophoric, self-heating, reactivity with water, which results in the release of flammable or toxic gases, and sensitivity to mechanical impact.

Readily combustible solid – powdered, granular, or pasty hazardous product that can be easily ignited by brief contact with an ignition source and, when ignited, has a flame that spreads rapidly.

Relative density – the ratio of the density of a substance to the density of a standard substance (usually water). This translates into the ratio of the weight of a product to the weight of an equal volume of water. Products with a relative density greater than 1 are heavier than water (and will sink in water). Products with a relative density of less than 1 are lighter than water (and can spread across the top of water).

Relative vapour density – the ratio of the density of a gas or vapour to the density of a reference gas, typically air, under the same conditions of temperature and pressure. See also "Vapour density".

Reproductive toxicity – hazardous products classified in this hazard class may damage or are suspected of damaging fertility and/or the unborn child (baby) after exposure to a mixture or substance. This hazard class has an additional category for products that may cause harm to breast-fed children. Reproductive toxicity refers to:

- adverse effects on sexual function and fertility
- adverse effects on the development of the embryo, fetus, or offspring, or
- effects on or via lactation

Respiratory or skin sensitization – see “Respiratory sensitizers” and “Skin Sensitizers”.

Respiratory sensitizers – hazardous products classified as Respiratory sensitizers, as part of the Respiratory or Skin Sensitization hazard class, are liable (likely) to lead to hypersensitivity (increased sensitivity) of the airways following inhalation of a mixture or substance. These products may cause allergy, asthma symptoms, or breathing difficulties if inhaled.

Route of exposure – refers to the way in which a product can enter the body. Workplace chemicals can affect the body if inhaled (breathed in), following skin contact (including absorption through the skin) or eye contact, and if ingested (swallowed).

RTECS® – RTECS® stands for Registry of Toxic Effects of Chemical Substances.

Safety Data Sheet (SDS) – a document that contains specified, required information about a hazardous product, including information related to the hazards associated with any use, handling, or storage of the hazardous product in a workplace.

Sell (a hazardous product) – offer for sale or distribution, expose for sale or distribution (e.g., advertising), have in possession for sale or distribution or distribute, whether for consideration or not, to one or more recipients. The definition also includes the transfer of possession of a hazardous product that creates a bailment. **Bailment** means the transfer of possession without transferring ownership.

Self-heating substances and mixtures – hazardous products classified in this hazard class are solid or liquid products that self-heat and consequently may catch fire, or that may catch fire when in large quantities. These products are liable to self-heat by reaction with air and without an energy supply. They differ from pyrophoric substances in that they will ignite only after a longer period of time or when in large amounts.

Self-reactive substances and mixtures – hazardous products classified in this hazard class may cause a fire or explosion if heated. These products are liable to undergo a strongly exothermic (producing heat and energy) decomposition, having a heat of decomposition equal to or greater than 300 J/g, even without the participation of oxygen.

Serious eye damage/eye irritation – see “Serious eye damage” and/or “Eye irritation”.

Serious eye damage – hazardous products classified for Serious eye damage, as part of the Serious Eye Damage/Eye Irritation hazard class, can produce tissue damage in the eye or serious physical decay of vision occurring after exposure of the eye to a mixture or substance that is irreversible or not fully reversed within 21 days. Effects could include permanently impaired vision or blindness.

Signal word – in respect of a hazardous product, the word “Danger” or “Warning” that is used to alert the reader of the product label or SDS to a potential hazard and to indicate its severity.

Significant new data – is new data regarding the hazard presented by a hazardous product that:

- changes its classification in a category or sub-category of a hazard class, or
- results in its classification in another hazard class, or
- changes the ways to protect against the hazard presented by the hazardous product.

Simple asphyxiants – hazardous products classified in this hazard class may displace oxygen in the air and cause rapid suffocation. These products are gases that are liable to cause asphyxiation by the displacement of air.

Skin corrosion/irritation – see “Skin corrosion” and/or “Skin irritation”.

Skin corrosion – hazardous products classified for Skin corrosion, as part of the Skin Corrosion/Irritation hazard class, cause severe skin burns and eye damage. Skin corrosion means the production of irreversible damage to the skin, namely, visible necrosis (tissue death) through the epidermis and into the dermis (layers of the skin) occurring after exposure to a mixture or substance, and includes ulcers, bleeding, bloody scabs and, within a 14-day observation period, discolouration due to blanching of the skin, complete areas of alopecia (loss of hair), and scars.

Skin irritation – hazardous products that classify for Skin irritation, as part of the Skin Corrosion/Irritation hazard class, are liable (likely) to produce reversible damage to the skin occurring after exposure to a mixture or substance. Effects could include redness, itching, or swelling.

“SKIN” Notation – See Occupational exposure limit values.

Skin sensitizers – hazardous products that are classified as Skin sensitizers, as part of the Respiratory or Skin Sensitization hazard class, may cause an allergic response after skin contact with a mixture or substance.

Solubility – the ability of a product to dissolve in water or another liquid. Solubility may be expressed as a ratio or may be described using words such as insoluble, very soluble or miscible. Often, on an SDS, "Solubility" describes solubility in water. Solubility information is useful for planning spill clean-up and fire-fighting procedures.

Specific target organ toxicity (STOT) – Repeated exposure – hazardous products classified in this hazard class cause or may cause damage to organs (e.g., liver, kidneys or blood) following prolonged or repeated exposure to the product.

Specific target organ toxicity (STOT) – Single exposure – hazardous products classified in this hazard class cause or may cause damage to organs (e.g., liver, kidneys, or blood) following a single exposure to the product. This hazard class also includes a category for products that cause transient (temporary) respiratory irritation, or transient (temporary) drowsiness or dizziness (called "narcotic effects").

Specific target organ toxicity arising from a single exposure to a hazardous product means specific, non-lethal toxic effects on target organs that arise from a single exposure to a hazardous product, including all health effects liable to impair the function of the body or any of its parts, whether reversible or irreversible, immediate or delayed. This hazard class excludes health hazards addressed by the Acute toxicity, Skin corrosion/irritation, Serious eye damage/eye irritation, Respiratory or skin sensitization, Germ cell mutagenicity, Carcinogenicity, Reproductive toxicity or Aspiration hazard classes.

STEL - STEL stands for Short-Term Exposure Limit. (See Occupational exposure limit values.)

Storage requirements – specific instructions to safely store the hazardous product and prevent hazardous conditions from developing during storage.

Substance – any chemical element or chemical compound that is in its natural state or that is obtained by a production process, whether alone or together with:

a. any additive that is necessary to preserve the stability of the chemical element or chemical compound,

b. any solvent that is necessary to preserve the stability or composition of the chemical element or chemical compound, or

c. any impurity that is derived from the production process.

Substances and mixtures which, in contact with water, emit flammable gases – hazardous products classified in this hazard class react with water to release flammable gases. In some cases, the flammable gases may ignite spontaneously (very quickly). These products are liquids and solids that, by interaction with water, are liable to become spontaneously flammable or give off flammable gases in dangerous quantities.

Suitable extinguishing media – see Extinguishing media.

Supplier – a person who, in the course of business, sells or imports a hazardous product.

Supplier label – a label that contains specified, required information about a hazardous product that meets the requirements of the *Hazardous Products Regulations*. These labels must be provided by suppliers and must include the product identifier, supplier identifier, and the pictogram(s), signal word, hazard statement(s) and precautionary statement(s) as required by the product's classification. Supplier labels must be provided in both English and French.

Synonyms – alternative names for the same substance. For example, methanol and methyl hydrate are synonyms for methyl alcohol. Synonyms may help in locating additional information on a substance.

Threshold limit values (TLV®s) – airborne concentrations of substances to which it is believed that nearly all workers may be exposed day after day without experiencing adverse (unhealthy) effects. ACGIH® develops these values.

Toxicity – a product's ability to cause adverse health effects in people exposed to it.

Trade Name – the name under which a product is commercially known. Some products are sold under common generic names, such as Stoddard solvent or degreaser, or under proprietary or trademarked names, such as Varsol®. Trade names are often identified by a trademark symbol such as ® or ™.

Trade secret – see Confidential business information.

Transportation of Dangerous Goods (TDG) – federal legislation that controls the conditions under which dangerous goods may be transported on public roads, in the air, by rail or by ship. Its purpose is to protect the health and safety of persons in the vicinity of transport accidents involving those goods.

Transport information – basic classification information for the transport or shipment of a product by road, rail, sea or air.

TWA – TWA stands for Time-Weighted Average. (See “Occupational exposure limit values”.)

UN number – the four-digit identification number issued in accordance with the United Nations Model Regulations.

Unsuitable extinguishing media – see "Extinguishing media".

Upper explosive limit (UEL) or Upper flammability limit (UFL) – the maximum concentration of a product in air that will burn or explode when it is exposed to a source of ignition. At concentrations greater than the UEL, the mixture is “too rich” to burn or explode. The UEL is the same as the UFL. (See also “Lower explosive limit (LEL) or Lower flammability limit (LFL)”.)

Vapour – the gaseous form of a mixture or substance released from its liquid or solid state.

Vapour density – the weight of a vapour or gas compared to the weight of an equal volume of air. Products with a vapour density greater than one are heavier than air and can accumulate in low areas.

Vapour pressure – the pressure exerted by the vapour formed over a liquid in a closed container under standard test conditions and reported as an absolute pressure.

Ventilation – the movement of air, which is intended to remove contaminated air from the work place. There are several different kinds of ventilation.

- **Mechanical ventilation** – the movement of air by mechanical means (e.g., a wall fan). There are two kinds of mechanical ventilation: general ventilation and local exhaust ventilation.
    - **General ventilation** – also known as **dilution ventilation** - is the removal of contaminated air from the general area and the bringing in of clean air. This movement of air dilutes the amount of contaminant in the work environment. General ventilation is usually suggested for non-hazardous products.
    - **Local exhaust ventilation** – is the removal of contaminated air directly at its source. This type of ventilation can help reduce worker exposure to airborne substances more effectively than general ventilation, because it does not allow the substance to enter the work environment. It is usually recommended for hazardous airborne substances.
- **Natural ventilation** – is a type of general ventilation which depends on natural instead of mechanical means for air movement. Natural ventilation can depend on the wind or the difference in temperature from one area to another to move air through a building. Therefore, it is unpredictable and unreliable.

Viscosity – a measure of a fluid's resistance to flow. There are two types of viscosity values:

- dynamic viscosity, which measures internal resistance to flow of a fluid under an applied force, and

- kinematic viscosity, which is the ratio of dynamic viscosity to density.

VOC – VOC stands for Volatile Organic Compound.

WHMIS – WHMIS stands for Workplace Hazardous Materials Information System. WHMIS is Canada's national hazard communication system for hazardous products in the work place. It applies to suppliers, importers, and distributors of hazardous products that are sold in or imported into Canada and intended for use, handling or storage in Canadian work places. WHMIS applies as well to the employers and workers who use those products.

WHMIS 1988 – The original WHMIS system enacted in 1988 through the *Hazardous Products* Act and the *Controlled Products Regulations* is now referred to as “WHMIS 1988”.

WHMIS 2015 – On February 11, 2015, the Government of Canada published the *Hazardous Products Regulations* (HPR), which, in addition to the amendments made to the *Hazardous Products Act* (HPA), modified WHMIS 1988 to incorporate the GHS for workplace chemicals. This modified WHMIS was referred to as WHMIS 2015 until December 15, 2022, when WHMIS was again amended. The current terminology is WHMIS.

Workplace label – a label that is required when a hazardous product is produced (made) at the workplace and used in that workplace; when a hazardous product is decanted (e.g., transferred or poured) into another container; or when a supplier label becomes lost or illegible (unreadable).

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