

# WHMIS PROGRAM

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## 1.0 PURPOSE

Workplace Hazardous Materials Information System (WHMIS) is incorporated into the Occupational Health and Safety Act and is law in the province of Ontario. This legislation states that if you work with, or in proximity, to controlled products your employer must make every reasonable effort to ensure that the information you need to work safely with those products is available to you and understood.

## 2.0 SCOPE

This program applies to all personnel associated with the University of Waterloo and includes all workers and students that handle or use hazardous products as part of work or their studies.

## 3.0 DEFINITIONS

### Worker

A worker is any one of the following regardless of whether or not financial compensation is given:

- Regular full/part-time
- Casual staff
- Contract staff
- Research assistants
- Teaching assistants
- Faculty
- Visiting scholars and post-docs
- Unpaid learners and volunteers

### Student

A student is someone, whether part-time or full time, attending classes as part of an undergraduate or graduate program.

See the [Glossary](#) for a complete list of terms used in this program.

## 4.0 ROLES AND RESPONSIBILITIES

### 4.1 UNIVERSITY OF WATERLOO

- Create, administer and review the WHMIS 2015 program.
- Educate and provide training to workers on the hazards and safe use of products.

- Ensure appropriate control measures are in place to protect the health and safety of workers.

## **4.2 SUPERVISOR/MANAGER**

- Ensure that workers and students complete UWaterloo's WHMIS 2015 training module.
- Ensure proper labelling on hazardous products.
- Ensure workers and students receive training workplace specific procedures for storage, handling, use, disposal, emergencies and spills on the hazardous materials they work with.
- Maintain and provide access to up to date Safety Data Sheets to workers and students.

## **4.3 WORKERS AND STUDENTS**

- Participate in the education and training programs on controlled products.
- Follow storage, handling and use guidelines outlined by the University of Waterloo with respect to controlled products.
- Take necessary steps to protect themselves and their co-workers.
- Participate in identifying and eliminating risks.
- Prepare workplace/laboratory labels as needed.

## **4.4 SAFETY OFFICE**

- Create, administer and maintain the WHMIS 2015 program.

## **4.5 JOINT HEALTH & SAFETY COMMITTEE (JHSC) WORKER MEMBERS**

- Review the WHMIS 2015 program annually.

# **5.0 PROCEDURES**

## **5.1 LABELS**

### **5.1.1 Supplier Label**

Supplier labels are attached by the supplier and must contain the following information:

- **Product identifier** is the brand name, chemical name, common name, generic name or trade name of the hazardous product.
- **Initial supplier identifier** is the name, address and telephone number of either the Canadian manufacturer or the Canadian importer\*.
- **Pictograms** are hazard symbol within a red "square set on one of its points".

- **Signal words** are words used to alert the reader to a potential hazard and to indicate the severity of the hazard.
- **Hazard statements** are standardized phrases that describe the nature of the hazard posed by a hazardous product.
- **Precautionary statements** are standardized phrases that describe measures required to minimize or prevent adverse effects resulting from exposure to a hazardous product or resulting from improper handling or storage of a hazardous product.
- **Supplemental label information** is information required based on the classification of the product.

For example, the label for a mixture containing ingredients with unknown toxicity in amounts higher than or equal to 1% must include a statement indicating the percent of the ingredient or ingredients with unknown toxicity. Labels may also include supplementary information about precautionary actions, hazards not yet included in the GHS, physical state, or route of exposure. This information must not contradict or detract from the standardized information.

### **5.1.2 Supplier Label**

Workplace labels need updated as soon as practicable after a supplier provides significant new data to the employer. These labels need placed on secondary containers when decanted from supplier containers and must contain the following information:

- A product name that matches the product name on the SDS or original supplier label
- Safe handling precautions (may include pictograms or other supplier label information)
- A reference to the SDS

	<b>Exploding bomb</b> (for explosion or reactivity hazards)		<b>Flame</b> (for fire hazards)		<b>Flame over circle</b> (for oxidizing hazards)
	<b>Gas cylinder</b> (for gases under pressure)		<b>Corrosion</b> (for corrosive damage to metals, as well as skin, eyes)		<b>Skull and Crossbones</b> (can cause death or toxicity with short exposure to small amounts)
	<b>Health hazard</b> (may cause or suspected of causing serious health effects)		<b>Exclamation mark</b> (may cause less serious health effects or damage the ozone layer*)		<b>Environment*</b> (may cause damage to the aquatic environment)
	<b>Biohazardous Infectious Materials</b> (for organisms or toxins that can cause diseases in people or animals)				

\* The GHS system also defines an Environmental hazards group. This group (and its classes) was not adopted in WHMIS 2015. However, you may see the environmental classes listed on labels and Safety Data Sheets (SDSs). Including information about environmental hazards is allowed by WHMIS 2015.

**Figure 1: WHMIS 2015 symbols**

### 5.1.3 HAZARD CLASSES

WHMIS 2015 introduces a new system for classifying hazardous products. There are at least three possible levels of classification for an individual product. Moving from the most general classification to more specific ones, these levels are:

- Hazard “group”
- Hazard “class”
- Hazard “category”
- Hazard “subcategory” (in some cases)

There are two broad hazard groups:

- Physical hazards
- Health hazards

Products in the physical hazards group are classified based on characteristics such as flammability or reactivity. Health hazards are grouped based on their ability to cause a health effect, such as cancer or skin irritation. Both groups are divided into classes of materials with similar properties. There are 19 distinct classes in the physical hazards group and 12 classes in the health hazards group.

Classes in the Physical Hazards Group are:

- Flammable gases
- Flammable aerosols
- Oxidizing gases
- Gases under pressure
- Flammable liquids
- Flammable solids
- Self-reactive substances and mixtures
- Pyrophoric liquids
- Pyrophoric solids
- Self-heating substances and mixtures
- Substances and mixtures which, in contact with water, emit flammable gases
- Oxidizing liquids
- Oxidizing solids
- Organic peroxides
- Corrosive to metals
- Combustible dusts\*
- Simple asphyxiants\*
- Pyrophoric gases\*
- Physical hazards not otherwise classified\*

Classes in the Health Hazard Group are:

- Acute toxicity
- Skin corrosion/irritation
- Serious eye damage/eye irritation
- Respiratory or skin sensitization
- Germ cell mutagenicity
- Carcinogenicity
- Reproductive toxicity
- Specific target organ toxicity – single exposure
- Specific target organ toxicity – repeated exposure
- Aspiration hazard
- Biohazardous infectious materials\*
- Health hazards not otherwise classified\*

\* These hazard classes are part of WHMIS 2015 but are not part of the GHS.

Most hazard classes are divided into categories and subcategories based on the severity of the hazard. A number identifies most categories and a number and letter identify most subcategories. The lower the category number, the more severe the hazard, for example, a product classified as a Flammable Liquid-Category 1 is more hazardous than a Flammable Liquid-Category 2.

## **5.2 MATERIAL SAFETY DATA SHEETS (MSDS) AND SAFETY DATA SHEETS (SDS)**

MSDSs/SDSs are summary documents that provide information about the hazards of a product and advice about safety precautions. The manufacturer or supplier of the product usually writes the SDSs. In some circumstances, an employer may be required to prepare an SDS (e.g., when the product is produced and used exclusively in the workplace).

Every SDS must provide a date of last revision in Section 16 – Other Information. You will know if an SDS has been updated by checking this date, and comparing it to any previous SDS you have.

SDSs provide more detailed hazard information about the product than the label. They are an important resource for workplaces and workers to help educate more about the product(s) used. Use this information to identify the hazards of the products you use and to protect yourself from those hazards, including safe handling and emergency measures.

SDSs tell users:

- The hazards related to the product.
- How to use the product safely.
- What to expect if the recommendations are not followed.
- How to recognize symptoms of exposure.
- What to do if emergencies occur.

Every WHMIS controlled product in your work/study area must have an associated SDS readily available. These need updated as soon as practicable with any significant new data received from the supplier or that becomes available to the employer. Do not keep SDSs in locked cabinets/rooms/desks; they must be accessible to anyone that works on or near the controlled product. An SDS may be kept in either hard (i.e. paper) or soft (i.e. electronic) format as appropriate, with the following requirements.

- **Hard copies** (when required) must be visible and accessible at all times.
- **Soft copies** must be accessible through a computer to all workers/students in the area where the controlled products are stored or used.

Ready access means:

- Having a userID and password, if the computer is security enabled.
- Knowing the server and file path to find the information.
- If applicable, knowing how to use the MSDS management software.
- Having privileges and knowing how to print a hardcopy.

**Maintain SDS as follows:**

**Laboratories/shops/studios**

- Hard copies made available for:
  - Routinely (weekly or more frequently) used controlled products
  - Compressed gasses
  - Controlled products that are present in a:
    - Pipe
    - Piping system (including valves)
    - Process vessel
    - Reaction vessel

- Soft copies may be maintained for all remaining controlled products.

#### **Hazardous product storage areas**

- Soft copies are acceptable.
- Hard copies must be made available when material is brought out of storage.

#### **Hazardous product dispensing areas**

- Hard copies must be maintained for all hazardous products dispensed in the area.

### **5.3 WASTE DISPOSAL AND HAZARDOUS MATERIAL SPILLS**

Supervisors are generally responsible for implementing work area specific procedures. There are however, some procedures related to WHMIS 2015 that are university wide. Specifically, what to do with your waste controlled products and what to do in the event of a spill of a controlled product that is beyond your ability to handle safely.

#### **5.3.1 WASTE DISPOSAL**

Under the WHMIS regulations, hazardous waste is exempt from the requirements of having a supplier or workplace label and an SDS. It is not exempted from the training requirements. Your supervisor or lab instructor will outline how to properly dispose of waste controlled products.

It is extremely important to follow disposal instructions. University of Waterloo requires that special labels are placed on every container of hazardous waste. If you have questions regarding hazardous waste disposal or would like to obtain the hazardous waste labels, please contact the ESF technician at ext. 35755.

All chemical, biological and radioactive wastes are to be disposed of at the Environmental Safety Facility (ESF) located in your building during operating hours or arrange a pickup by calling ext. 35755. The following are the ESF locations and operating hours:

- ESC-151 - Monday through Friday 11am-12pm
- DWE-1521 - Tuesday 1-1:30pm
- E6-1022 - Tuesday 2-2:30pm
- PHR-1016 - Monday 2-2:30pm (for holiday Monday the prior Friday 2-2:30 pm)
- OPT – Pick up arranged by request, call x35755

The University policy requires compliance with environmental regulations. Do not put any hazardous materials in the regular garbage or into the drains.

### **5.3.2 HAZARDOUS MATERIALS SPILLS**

Areas in which hazardous materials are present must display University of Waterloo's hazardous materials spill poster. Contact the Safety Office at x33587 for a poster or download it from the Safety Office website [www.uwaterloo.ca/safety-office](http://www.uwaterloo.ca/safety-office).

Follow these procedures for biological, chemical and radioactive materials. Contact the Safety Office ext. 35755 with any questions or for assistance.

#### **Prior to work with hazardous materials:**

1. Determine spill procedures from MSDS/SDS for all chemicals.
2. Anyone handling hazardous materials needs trained in spill procedures.
3. Obtain proper spill kits and cleaning material.

#### **Small spills that pose no immediate threat to health:**

1. Notify occupants in the immediate area of the spill.
2. Use spill kits to absorb and contain according to spill procedure.
3. Place material in a secure and ventilated area.
4. Contact Safety Office (ex. 35755) for disposal instructions.

#### **Large spills or spills that pose an immediate threat to health:**

1. Notify occupants in the immediate area of the spill.
2. Evacuate the immediate area.
3. Call UWaterloo police, ex. 22222 or call 519-888-4911.

## **6.0 TRAINING**

WHMIS 2015 makes a distinction between education and training. Education generally refers to what is WHMIS and how it works. This includes learning about the hazard classes and corresponding pictograms. This also includes learning about the various labelling requirements, such as supplier, workplace and laboratory labels and what information you can expect to find on each label. For this reason, all workers and students must complete the online WHMIS 2015 training module that is available on LEARN. The online module is valid for 5 years and needs renewed at the end of this time. If someone demonstrates a lack of understanding in basic WHMIS principles, they may be required to complete the online module before the 5-year period ends.

Training refers to the specific procedures in each department for the storage, handling, use, disposal, emergencies, locations of SDSs and spills for hazardous materials.

Supervisors or lab demonstrators deliver this training before anyone uses a hazardous material for the first time. Training renewal does not have a specific time period or expiry date. If any of the following occurs, re-training will be required.

- Someone demonstrates a lack of understanding or knowledge about WHMIS.
- Conditions in the workplace change.
- New products are introduced.
- Products have changed and now have different hazards.
- New hazard information becomes available.
- There is new information about safe use, handling, storage or disposal.

## **7.0 GLOSSARY**

### **Accidental release measures**

The steps to take in response to spills, leaks, or releases of a hazardous product to prevent or minimize adverse effects on people and property.

### **ACGIH®**

See “American Conference of Governmental Industrial Hygienists”.

### **Acid, Acidic**

See “pH”.

### **Acute**

Sudden or brief. “Acute” can describe either the duration (length) of an exposure or a health effect. An acute exposure is a short-term exposure (lasting for minutes, hours or days). An acute health effect is an effect that develops immediately or within minutes, hours or even days after an exposure. See “Chronic”.

### **Acute toxicity**

Hazardous products classified in this hazard class cause fatal, toxic or harmful effects if swallowed, in contact with skin and/or if inhaled. Acute toxicity refers to adverse effects following:

- Oral (swallowing) or dermal (skin) administration of a single dose, or multiple doses given within 24 hours.
- Inhalation exposure of 4 hours or of a duration that is converted to four hours.

Acute inhalation toxicity could result from exposure to the hazardous product itself, or to a product that, upon contact with water, releases a gaseous substance that is able to cause acute toxicity. See “LC50” and “LD50”.

### **Acute toxicity estimate (ATE)**

A numerical value that is used to evaluate acute toxicity. For an ingredient, the ATE is the LC50 or the LD50, if available, or a converted acute toxicity point estimate that is based on an experimentally obtained range or the classification category. For a mixture, the ATE is calculated for oral, dermal and inhalation toxicity based on the ATE values for all relevant ingredients and the percentage concentration in the product.

### **Administrative controls**

Controls that alter the way the work is done, including timing of work, policies and other rules, and work practices such as standards and operating procedures (including training, housekeeping and equipment maintenance).

#### **AIHA®**

AIHA® stands for American Industrial Hygiene Association.

### **Alkali, Alkaline**

See pH.

### **American Conference of Governmental Industrial Hygienists (ACGIH®)**

An international association of occupational hygienists that develops guidelines for the practice of occupational hygiene, including Threshold Limit Values (TLVs®) and Biological Exposure Indices (BEIs®). This publication serves as the basis for occupational exposure limits in many jurisdictions around the world.

### **ANSI**

ANSI stands for the American National Standards Institute.

### **Asphyxiant**

See Simple asphyxiants.

### **Aspiration hazards**

Hazardous products classified in this hazard class may be fatal if the hazardous product is swallowed and enters the airways. Aspiration toxicity includes severe acute effects, such as chemical pneumonia, varying degrees of pulmonary injury or death, following the entry of a liquid or solid directly through the mouth or nose, or indirectly from vomiting, into the trachea and lower respiratory system.

### **Auto-ignition temperature**

The lowest temperature at which a product ignites when no spark or flame is present.

### **Base, Basic**

See pH.

### **Bailment**

The transfer of possession without transferring ownership. See also “Sell”.

### **Bioaccumulative potential**

Describes the potential for the substance or certain components of a mixture to accumulate in animal or plant life, and possibly pass through the food chain.

### **Biological Exposure Indices (BEIs®)**

Guidance values developed by ACGIH to assess biological monitoring results. Biological monitoring involves the measurement of the concentration of a chemical indicator (such as the substance itself or a chemical formed from the substance by the body) in body components (e.g., blood, urine) of people who have been exposed to the substance. Biological monitoring is used to indicate how much of the substance has been absorbed into the body. The BEI generally identifies a concentration below which nearly all workers should not experience adverse health effects.

### **Biohazardous infectious materials**

Hazardous products that are classified in this hazard class are microorganisms, nucleic acids or proteins that cause or are a probable cause of infection, with or without toxicity, in humans or animals.

### **Boiling point**

See “Initial boiling point”.

**Bulk shipment**

A shipment of a hazardous product that is contained in any of the following, without intermediate containment or intermediate packaging,

- A vessel that has a water capacity equal to or greater than 450 L
- A freight container, road vehicle, railway vehicle or portable tank
- The hold of a ship
- Pipeline

**Canadian Centre for Occupational Health and Safety (CCOHS)**

An occupational health and safety information service with the mandate to promote workplace health and safety, and encourage attitudes and methods that will lead to improved worker physical and mental health. CCOHS provides a wide range of products and services, including free access to a large collection of factsheets on occupational health and safety topics.

**CANUTEC**

CANUTEC stands for Canadian Transport Emergency Centre, which is operated by the Transportation of Dangerous Goods (TDG) Directorate of Transport Canada. CANUTEC provides information and communications assistance in case of transportation emergencies involving dangerous goods. It is accessible in Canada by telephone, 24 hours a day, year round at (613) 996-6666 (collect) or \*666 on a cell phone.

**Carcinogenicity**

Hazardous products classified in this hazard class may cause cancer or are suspected of causing cancer. These products are liable to lead to cancer or increase the incidence of cancer.

**CAS Registry Number**

The Chemical Abstracts Service Registry Number. This identification number is assigned to a chemical by the Chemical Abstracts Service, a division of the American Chemical Society.

**Ceiling (C)**

See “Occupational exposure limit values”.

**Chemical name**

A scientific designation of a material or substance:

- Made according to the naming rules of either the Chemical Abstracts Service, a division of the American Chemical Society, or the International Union of Pure and Applied Chemistry.
- It can also be internationally recognized and that clearly identifies the material or substance.

### **Chemical stability**

The ability of a product to remain unchanged under normal ambient and anticipated storage and handling conditions of temperature and pressure. An unstable product may decompose, burn or explode under normal environmental conditions. Any indication that the product is unstable gives warning that special handling and storage precautions may be necessary.

### **Chronic**

Long-term or prolonged. “Chronic” can describe either the length (duration) of an exposure or a health effect. A chronic exposure is a long-term exposure (lasting for months or years). A chronic health effect is an adverse health effect resulting from long-term exposure or a persistent adverse health effect resulting from a short-term exposure.

### **Closed cup**

A test procedure used to measure the flash point of a product, using a closed cup, which prevents the vapour from escaping. A closed cup flash point is generally lower than a flash point measured using an open cup method.

### **CNS**

CNS stands for central nervous system.

### **Coefficient of water/oil distribution**

The ratio of a product’s distribution between the water and oil portions of a mixture of water and oil. A value of less than 1 indicates that the product is more soluble in oils. A value of greater than 1 indicates that the product is more soluble in water.

### **Combustible dusts**

Hazardous products classified in this hazard class may form combustible dust concentrations in air. These products are in the form of finely divided solid particles that, upon ignition, are liable to catch fire or explode when dispersed in air.

### **Combustible liquids**

Combustible liquids are included in the Flammable Liquids hazard class. Combustible liquids will not ignite or burn as readily as Flammable Liquids.

### **Complex mixture**

A mixture that has a commonly known generic name and that is:

- Naturally occurring without artificial aid.
- A fraction of a naturally occurring mixture that results from a separation process.
- It can also be a modification of a naturally occurring mixture or a modification of a fraction of a naturally occurring mixture that results from a chemical modification process.

Petroleum distillates and turpentine are examples of complex mixtures. A complex mixture can be comprised of many individual ingredients whose concentrations may vary from batch to batch.

### **Conditions to avoid**

Conditions such as heat, pressure, shock, static discharge, vibrations or other physical stresses that might result in a hazardous situation involving the product.

### **Confidential business information (CBI)**

Also known as “trade secrets” - certain information does not have to be disclosed on a WHMIS 2015 SDS and/or label if the supplier or employer believes that providing the information could affect (hurt) their business. Health Canada must approve the claim, which must follow the rules set out under the *Hazardous Materials Information Review Act*. CBI examples include the chemical identity or concentration of an ingredient in a hazardous product.

### **Container**

Includes a bag, barrel, bottle, box, can, cylinder, drum or similar package or receptacle but does not include a storage tank. See “Outer container”.

### **Control parameters**

Includes occupational exposure limits and biological limit values. Depending on their source, occupational exposure limit values have different names and often have different numerical values. See “Occupational exposure limit values”.

### **Controls**

Measures used to protect workers from exposure to a hazardous product. Control measures include engineering controls (e.g., ventilation), administrative controls (e.g., scheduling, training) or personal protective equipment.

### **Corrosive to metals**

Hazardous products classified in this hazard class are liable to damage or destroy metal by chemical action.

### **Critical temperature**

The temperature above which a pure gas cannot be liquefied, regardless of the degree of compression.

### **Decomposition temperature**

The temperature at which the product chemically decomposes.

### **Density**

The weight of a product for a given volume. Density is usually given in units of grams per millilitre (g/mL) or grams per cubic centimetre (g/cc). The volume of a product in a container can be calculated from its density and weight.

### **Dilution ventilation**

See “Ventilation”.

### **Disposal considerations**

Information for safe handling for disposal, and recommended methods for disposal of the hazardous product, including any contaminated packaging.

### **Engineering controls**

Controls used to separate a worker from a hazard. These controls include design of or modifications to plants, equipment, or processes to reduce or eliminate hazards (e.g., process enclosure, isolation of an emission source, or ventilation).

### **Evaporation rate**

A term that indicates how quickly a product evaporates compared to n-butyl acetate. The evaporation rate of butyl acetate is 1. A value greater than 1 means the product has a high evaporation rate and will mix with air very quickly.

### **Explosive limits**

See “Lower explosive limit (LEL)” or “Lower flammability limit (LFL)” and “Upper explosive limit (UEL)” or “Upper flammability limit (UFL)”.

### **Exposure limit values**

See “Occupational exposure limit values”.

### **Extinguishing media**

Agents which can put out fires involving the product. Common extinguishing agents are water, carbon dioxide, dry chemical, and "alcohol" foam. It is important to know which extinguishers can be used (suitable extinguishing media) so they can be made available at the worksite. It is also important to know which agents cannot be used (unsuitable extinguishing media) since an incorrect extinguisher may not work or may create a more hazardous situation. If several products are involved in a fire, an extinguisher effective for all of the products should be used.

### **Eye irritation**

Hazardous products classified for Eye irritation, as part of the Serious eye damage/eye irritation hazard class, produce changes in the eye which are fully reversible within 21 days. Effects could include redness, itching or swelling.

### **First-aid measures**

The initial care that can be given by an untrained responder to a person who is experiencing symptoms of exposure to the product.

### **Flammable (or flammability) limits**

See "Lower explosive limit (LEL)" or "Lower flammability limit (LFL)" and "Upper explosive limit (UEL)" or "Upper flammability limit (UFL)".

### **Flammable**

Able to ignite (catch fire) easily.

### **Flammable aerosols**

Hazardous products classified in this hazard class contain one or more flammable components in an aerosol dispenser and that, when dispensed, are liable to ignite. Products that contain flammable components in an aerosol dispenser at a concentration less than or equal to 1.0% and that have a heat of combustion less than 20 kJ/g are excluded from this hazard class.

### **Flammable gases**

Hazardous products classified in this hazard class are gases that have a flammable range when mixed with air (at 20 deg C and 101.3 kPa).

### **Flammable liquids**

Hazardous products classified in this hazard class are liquids that have a flash point of not more than 93 deg C.

### **Flammable solids**

Hazardous products classified in this hazard class are readily combustible solids or solids that are liable to cause or contribute to fire through friction. A “readily combustible solid” means a 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 spread rapidly.

### **Flash back**

Occurs when a trail of flammable gas, vapour or aerosol is ignited by a distant spark, flame or other source of ignition. The flame then travels back along the trail of gas, vapour or aerosol to its source. A serious fire or explosion could result.

### **Flash point**

The lowest temperature at which the application of an ignition source causes the vapours of a liquid to ignite (catch fire). The lower the flash point, the more easily the product will ignite and burn.

### **Fugitive emission**

A gas, liquid or solid, vapour, fume, mist, fog or dust that escapes from process equipment or from emission control equipment or from a product where workers may be readily exposed to it.

### **Freezing point**

The temperature below which a liquid product becomes solid. See “Melting point”.

### **Fumes**

Very small, airborne, solid particles formed by the cooling of a hot vapour. For example, a hot zinc vapour may form when zinc-coated steel is welded. The vapour then condenses to form fine zinc fume as soon as it contacts the cool surrounding air. Fumes are smaller than dusts and are more easily breathed into the lungs.

### **Gases under pressure**

Hazardous products classified in this hazard class are compressed gases, liquefied gases, dissolved gases, or refrigerated liquefied gases. Compressed gases, liquefied gases and dissolved gases may explode if heated. Refrigerated liquefied gases may cause cryogenic (severe cold) burns or injury.

These products consist of a gas and can be any of the following:

- Contained in a receptacle under a pressure of 200 kPa or more at 20 deg C.
- That is liquefied, or liquefied and refrigerated, but excludes any gas that has an absolute vapour pressure of not more than 300 kPa at 50 deg C.
- That is not completely gaseous at 20 deg C and 101.3 kPa.

**General ventilation**

See “Ventilation”.

**Germ cell mutagenicity**

Hazardous products classified in this hazard class may cause or are suspected of causing genetic defects. These products are liable lead to an increased occurrence of mutations in the germ (reproductive) cells.

**Globally Harmonized System of Classification and Labelling of Chemicals (GHS)**

An international system that defines and classifies the hazards of chemical products, and communicates health and safety information on labels and SDSs in a standardized way. The GHS is developed through consensus at the United Nations. The GHS “purple book” is a guidance document. Only the elements of GHS that have been explicitly adopted in legislation (e.g., in the HPR) are enforceable.

**Handling and storage**

The basic precautions to be followed when handling and for storing a hazardous product, or the basic equipment to be used during handling and storing.

**Hazard**

The potential for harmful effects. The hazards of a product are evaluated by examining the properties of the product, such as toxicity, flammability and chemical reactivity.

**Hazard class**

A way of grouping products together that have similar hazards or properties.

**Hazard category**

The subdivision within a hazard class that tells you about how hazardous the product is (the severity of hazard). Category 1 is always the greatest level of hazard (it is the most hazardous within that class). If Category 1 is further divided, Category 1A within the same hazard class is a greater hazard than category 1B. Category 2 within the same hazard class is more hazardous than category 3, and so on.

**Hazard classification**

The hazard class and category assigned to a hazardous product based on the comparison of the properties of the hazardous product with the criteria for each hazard class in the HPR.

### **Hazardous combustion product**

Hazardous substance(s) formed when the product burns. These substances may be flammable, toxic, reactive and/or have other hazards.

### **Hazard statement**

A required phrase assigned to a category or subcategory of a hazard class that describes the nature of the hazard presented by a hazardous product.

### **Hazardous decomposition product**

Hazardous substance(s) that may be released when a product reacts with other substances, as a result of aging, reaction with airborne oxygen or moisture or exposure to light.

### **Hazardous ingredient**

An ingredient in a mixture that, when evaluated as an individual substance according to the HPR, is classified in a category or subcategory of a health hazard class.

### **Hazardous product**

A product, mixture, material or substance that meets the criteria to be classified in one or more of the hazard classes of the HPR.

### ***Hazardous Products Act / Hazardous Products Regulations***

The Hazardous Products Regulations (HPR) are Canadian federal regulations enabled by the *Hazardous Products Act* (HPA). They are part of the national Workplace Hazardous Materials Information System (WHMIS 2015), and replace the Controlled Products Regulations (CPR). The HPR applies to all suppliers (importers or sellers) in Canada of hazardous products intended for use, handling or storage in Canadian work places. The regulations specify the criteria for classification of hazardous products. They also specify what information must be included on labels and Safety Data Sheets (SDSs).

### **Health hazards not otherwise classified (HHNOC)**

Hazardous products classified in this hazard class have a health hazard that is different from any other health hazard addressed in the HPR. These hazards must have the characteristic of occurring following acute or repeated exposure and having an adverse effect on the health of a person exposed to it, including an injury, or resulting in the death of that person. If a product is classified in this hazard class, the hazard statement on the label and SDS will describe the nature of the hazard.

### **Health professional**

As defined by the *Hazardous Products Regulations*, are:

- Physicians who are registered and entitled under the laws of a province to practice medicine and who are practicing medicine under those laws in that province.
- Nurses who are registered or licensed under the laws of a province to practice nursing and who are practicing nursing under those laws in that province.

### **Hazardous Products Act (HPA)**

See “Hazardous Products Act / Hazardous Products Regulations”.

### **Hazardous Products Regulations (HPR)**

See “Hazardous Products Act / Hazardous Products Regulations”.

### **IARC**

IARC stands for the International Agency for Research on Cancer. IARC is an agency of the World Health Organization. IARC evaluates information to identify environmental factors that can increase the risk of human cancer. These factors include chemicals, complex mixtures, occupational exposures, physical agents, biological agents and lifestyle factors. IARC publishes lists of agents which are classified as carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), possibly carcinogenic to humans (Group 2B), or not classifiable as to its carcinogenicity to humans (Group 3).

### **IDLH**

IDLH stands for Immediately Dangerous to Life or Health. For the purposes of respirator selection, the U.S. NIOSH defines the IDLH concentration as the airborne concentration that poses a threat of exposure to airborne contaminants when that exposure is likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment. The purpose of establishing an IDLH exposure concentration is:

- To ensure that the worker can escape from a given contaminated environment in the event of failure of the respiratory protection equipment.
- Is considered a maximum level above which only a highly reliable breathing apparatus providing maximum worker protection is permitted.

In the event of failure of respiratory protective equipment, every effort should be made to exit immediately.

### **Impervious**

A term used to describe protective gloves and other protective clothing. If a protective material is impervious to a substance, then that substance cannot readily penetrate through the material or damage the material. Different materials are impervious (resistant) to different substances. No single material is impervious to all substances. If

a SDS recommends wearing impervious gloves, you need to know the specific type of material from which the gloves should be made.

### **Importer**

A person or company that brings a hazardous product into Canada for sale to, or use at, a work place. Importers have the same WHMIS responsibilities as suppliers. An employer can be an importer.

### **Incompatible materials**

Substances which, when combined with a hazardous product, could react to produce a hazardous situation (e.g., explosion, release of toxic or flammable materials, liberation of excessive heat).

### **Individual protection measures (or Personal protective equipment (PPE))**

The clothing or equipment that a worker handling a hazardous product wears to reduce or prevent exposure to the product. Individual protection measures may include coveralls, face shields, aprons, gloves or respirators. The exact type of gloves and respirators should be specified, e.g., “vinyl gloves” or “organic vapour cartridge respirator”.

### **Initial boiling point**

The temperature of a liquid at which its vapour pressure is equal to the standard pressure of 101.3 kPa, (i.e., the temperature at which the first gas bubble appears).

### **Initial supplier identifier**

The name, address and telephone number of the manufacturer or the importer of the hazardous product who operates in Canada.

### **Interactive effects**

The potential effects from exposure to more than one substance at the same time. The effects of the individual substances may be increased or decreased due to the combined exposure.

### **Label**

A group of written, printed or graphic information elements that relate to a hazardous product. The label is to be affixed to, printed on or attached to the hazardous product or the container in which the hazardous product is packaged.

### **Laboratory sample**

A sample of a hazardous product that is packaged in a container that contains less than 10 kg of the hazardous product and that is intended solely to be tested in a laboratory. The definition of laboratory sample does NOT include a sample that is to be used for either of the following:

- By the laboratory for testing other products, mixtures, materials or substances.
- For educational or demonstration purposes.

### **LC50 (Lethal Concentration<sub>50</sub>)**

The airborne concentration of a substance or mixture that causes the death of 50 per cent of the group of animals in tests that measure the ability of a substance or mixture to cause poisoning when it is inhaled. These tests are usually conducted over a 4-hour period. The LC<sub>50</sub> is usually expressed as parts of test substance or mixture per million parts of air (ppm) for gases, or as milligrams of test substance or mixture per litre of air (mg/l) for dusts, mists or vapours.

### **LD50 (Lethal Dose<sub>50</sub>)**

The single dose of a substance or mixture that causes the death of 50 per cent of the group of animals in tests that measure the ability of a substance or mixture to cause poisoning when it is swallowed (oral exposure) or absorbed through the skin (dermal exposure). The LD<sub>50</sub> can vary depending on factors such as the species of animal tested and by the route of entry. The LD<sub>50</sub> is usually expressed as milligrams of substance or mixture per kilogram of test animal body weight (mg/kg).

### **Local exhaust ventilation**

See “Ventilation”.

### **Lower explosive limit (LEL) or Lower flammability limit (LFL)**

The lowest concentration of a substance in air that will burn or explode when it is exposed to a source of ignition. At concentrations below the LEL, the mixture is “too lean” to burn or explode. The LEL is the same as the LFL. See “Upper explosive limit (UEL) or Upper flammability limit (UFL)”.

### **Manufacturer**

A supplier who, in the course of business in Canada, manufactures, produces, processes, packages or labels a hazardous product and sells it.

### **Manufactured article**

An article that:

- Is formed to a specific shape or design during manufacture, the intended use of which is dependent in whole or in part on the shape or design.

- Will not release or otherwise cause an individual to be exposed to a hazardous product when being installed, if the intended use of the article requires it to be installed, or under normal conditions of use.

Examples of manufactured articles include a screwdriver, a refrigerator, or an empty cylinder.

### **Mechanical ventilation**

See “Ventilation”.

### **Melting point**

The temperature at which a solid product becomes a liquid. It is important to know the freezing or melting point for storage and handling purposes. For example, a frozen or melted product may burst a container. As well, a change of physical state could alter the hazards of the product. See “Freezing point”.

### **Mixture**

A combination of, or a solution that is composed of, two or more ingredients that, when they are combined, do not react with each other. (This definition does not include any such combination or solution that is a substance. See “Substance”.

### **Mutagenicity**

See “Germ cell mutagenicity”.

### **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. 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 up to 10 hours a day, 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)**

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)**

The concentration which should not be exceeded at any time.

### **“SKIN”**

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)**

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 peroxide means an organic (carbon containing) liquid or solid that contains 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 "Container".

### **Oxidizing gases, Oxidizing liquids, or 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 material more than air does. Oxidizing liquids and Oxidizing solids are liable to cause or contribute to the combustion of other material.

### **Particles Not Otherwise Specified (PNOS)**

A term defined by ACGIH® to describe particles for which there is no evidence of specific toxic effects such as fibrosis or systemic effects. (This term was previously called "particulates not otherwise classified (PNOC) and/or nuisance dust/nuisance particulate). These substances are not to be considered inert, 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. Removal of these substances by washing or rubbing may cause irritation.

### **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. Alkalinity increases as the number increases. Products with a pH of less than 7 are acidic. 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 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 is 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, Pyrophoric liquids, or 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 to ignite within five minutes after coming into contact with air. Pyrophoric gases are liable to ignite spontaneously in air at a temperature of 54 deg C or less.

### **Polymerization**

A chemical reaction that involves the combination of simple molecules to form large chain-like macro-molecules. This reaction can sometimes be observed as the “hardening” of a “non-inhibited” liquid product.

### **Reactivity**

Describes the intrinsic ability of a product to undergo a hazardous chemical change (e.g., organic peroxide, oxidizer, self-reactive, pyrophoric, self-heating).

### **Relative density**

The weight of a product compared to the weight of an equal volume of water. Products with a relative density greater than 1 are heavier than water. Products with a relative density less than 1 are lighter than water.

### **Reproductive toxicity**

Hazardous products classified in this hazard class may damage or are suspected of damaging fertility and/or the unborn child (baby). 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/ or “Skin Sensitizers”.

### **Respiratory sensitizers**

Hazardous products classified as Respiratory sensitizers, as part of the Respiratory or skin sensitization hazard class, may cause allergy or asthma symptoms or breathing difficulties if inhaled. These products are liable to lead to hypersensitivity (increased sensitivity) of the airways following inhalation.

**Route of exposure**

Refers to the way in which a product can enter the body. Workplace chemicals can affect the body if inhaled, 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 work place.

**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 products that may catch fire, or that may catch fire when in large quantities. These solid or liquid products are liable to self-heat by reaction with air and without energy supply. These products 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 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 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 and results in any of the following:

- A change in its classification in a category or sub-category of a hazard class.
- Results in its classification in another hazard class.
- 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 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), 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 to cause reversible damage to the skin. Effects could include redness, itching, or swelling.

### **“SKIN” Notation**

See “Occupational exposure limit values”.

### **Skin sensitizers**

Hazardous products that classify as Skin sensitizers, as part of the Respiratory or skin sensitization hazard class, may cause an allergic skin reaction. These products are liable to lead to an allergic response following skin contact.

### **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 a 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 arising from repeated exposure means specific toxic effects on target organs that arise from repeated exposure to a hazardous product, including all health effects liable to impair 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.

### **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.

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 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.
- c. Any impurity derived from the production process.

### **Substances and mixtures which, in contact with water, emit flammable gases**

Hazardous products 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.

### **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 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 names, such as Stoddard solvent or degreaser, or internationally recognized trade names, like Varsol. Trade names are sometimes identified by symbols such as (R) or (TM).

**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 transporting/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 “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**

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**

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.
- 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, as well as to the employers and workers who use those products.

## 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 is referred to as WHMIS 2015.

# APPENDIX A

## 8.0 LABORATORY SAMPLES

### 8.1 LABORATORIES AND LABORATORY SAMPLES

Under WHMIS 2015, the exemptions that previously applied to products originating from a laboratory supply house and intended for use in a laboratory have been eliminated. However, specific provisions for laboratory samples still exist. A laboratory sample is defined as “*a sample of a hazardous product that is packaged in a container that contains less than 10 kg of the hazardous product and that is intended solely to be tested in a laboratory but does not include a sample that is to be used:*

1. *by the laboratory for testing other products, mixtures, materials or substances;*  
*or*
2. *for educational or demonstration purposes”* (subsection 1(1), WHMIS Reg.).

#### **Laboratory samples received from a supplier**

The federal HPR provides certain exemptions to suppliers respecting labels and SDSs for samples of hazardous products sent to a laboratory for analysis (i.e. possession of the sample has been transferred but not ownership). The employer at a laboratory receiving a sample of a hazardous product does not have to obtain a full supplier label if:

- the laboratory sample is exempt from labelling requirements under the HPR, and
- an abbreviated supplier label that discloses the following information is provided:
  1. The chemical name or generic chemical name, if known to the supplier, of every material or substance in the sample that,
    1. individually, is classified in a category or subcategory of a hazard class listed in the Hazardous Products Act (Canada) and, is present

- above the concentration limit designated for that category or subcategory, and
2. in a mixture, is present at a concentration that results in the mixture being classified in a category or subcategory of a hazard class.

The employer is not required to obtain a supplier SDS for a laboratory sample if the supplier is not required to prepare one (subsection 17(1), WHMIS Reg.). Under the HPR, a supplier is exempted from providing a SDS for a laboratory sample if:

- the chemical name and concentration of the hazardous product or its ingredients are unknown, or
- the hazardous product from which the sample originates has not been offered for sale (subsection 5(4), HPR).

In addition, if a laboratory sample is classified only as Biohazardous Infectious Material-Category 1, and possession but not ownership is transferred, the sample does not require a label or SDS (subsection 5(3), HPR).

### **If a lab sample is transferred or decanted from the supplier's original container**

No workplace label is required, but the employer must ensure that the lab sample is clearly identified through a combination of identification visible to workers and worker education. The combination of identification and education must enable lab workers handling the sample to readily identify and obtain either the information required on a SDS, if one has been prepared, or the labelling information required on an abbreviated supplier's label (section 15, WHMIS Reg.).

### **If a lab sample is produced in the employer's workplace**

No workplace label is required for a laboratory sample that is produced in the employer's workplace, but the employer must ensure that the sample is clearly identified through a combination of identification visible to workers and worker education. The identification and education must enable lab workers handling the sample to readily identify and obtain either the information required on a SDS, if one has been prepared, or the labelling information required on an abbreviated supplier's label (section 15, WHMIS Reg.).

No SDS is required for a hazardous product that is a laboratory sample produced by the employer at the workplace (subsection 18(2), WHMIS Reg.).

### **Hazardous product produced for research and development**

No workplace label is required on a hazardous product that is produced in a lab, not removed from the lab, and intended by the employer solely for research and development purposes. Instead the employer must ensure that the hazardous product is

clearly identified through a combination of identification and education that enables workers to identify and obtain either the information required on a SDS, if one has been prepared, or such other information as is needed for the safe use, storage and handling of the product (section 16, WHMIS Reg.).