

WHMIS

WHMIS - Hazard Classes and Categories

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Important Information

Canada has aligned the Workplace Hazardous Materials Information System (WHMIS) with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

This document discusses the WHMIS supplier requirements as regulated by the federal legislation – the *Hazardous Products Act* and the *Hazardous Products Regulations* (HPR). This document reflects the Hazardous Products Regulations requirements as of December 15, 2022. The changes introduced in December 2022 are in force. Suppliers are granted a 3-year transition period (to December 15, 2025) to bring product classifications, safety data sheets and labels into compliance with the amendments.

For most workplaces, the most notable impact will be seen in the changes to the flammable gases class, and the new class of chemicals under pressure.

Health Canada is the government body responsible for the overall WHMIS supplier-related laws. Note that WHMIS is also regulated in the workplace by the provinces, territories and federal (for federally regulated workplaces) governments under their occupational health and safety legislation. While these jurisdictions based their WHMIS regulations on a common model, small variations between jurisdictions may exist.

Suppliers and employers must use and follow the WHMIS requirements for labels and safety data sheets (SDSs) for hazardous products sold, distributed, or imported into Canada.

Please refer to the following OSH Answers documents for information about WHMIS:

- [WHMIS – General](#)

- [WHMIS – Pictograms](#)
 - [WHMIS – Labels](#)
 - [WHMIS – Safety Data Sheets \(SDSs\)](#)
 - [WHMIS – Education and Training](#)
 - [WHMIS – WHMIS Program](#)
 - [WHMIS – Glossary](#)
 - [WHMIS – Confidential Business Information \(CBI\)](#)
 - [WHMIS – Variances](#)
 - [WHMIS – Laboratories](#)
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What is a hazard group?

WHMIS applies to two major groups of hazards: physical, and health. Each hazard group includes hazard classes that have specific hazardous properties.

- **Physical hazards group:** based on the physical or chemical properties of the product – such as flammability, reactivity, or corrosivity to metals.
- **Health hazards group:** based on the ability of the product to cause a health effect – such as eye irritation, respiratory sensitization (may cause allergy or asthma symptoms or breathing difficulties if inhaled), or carcinogenicity (may cause cancer).

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

What is a hazard class?

Hazard classes are a way of grouping together products that have similar properties. Most of the hazard classes are common to GHS and will be used worldwide by all countries that have adopted GHS. Some hazard classes are specific to WHMIS.

List of Hazard Classes

Physical Hazard Classes

- Flammable gases (includes pyrophoric gases and chemically unstable gases)

- 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
- Physical hazards not otherwise classified
- Chemicals under pressure

Health Hazard Classes

- 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

Note: GHS also defines an Explosive class and the Environmental Hazards group (not mandatory). The WHMIS regulations do not currently include the Explosives hazard class. Explosives are covered by other legislation in Canada.

What is a hazard category?

Each hazard class contains at least one category. The hazard categories are assigned a number (e.g., 1, 2, etc.). Categories may also be called "types". Types are assigned an alphabetical letter (e.g., A, B, etc.). In a few cases, sub-categories are also specified. Subcategories are identified with a number and a letter (e.g., 1A and 1B).

Some hazard classes have only one category (e.g., corrosive to metals). Others may have two categories (e.g., carcinogenicity (cancer)) or three categories (e.g., oxidizing liquids). There are a few hazard classes with five or more categories (e.g., organic peroxides).

The category tells you about how hazardous the product is (that is, the severity of hazard).

- Category 1 is always the greatest level of hazard (that is, 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.

There are a few exceptions to this rule. For example, for the Gases under pressure hazard class, the hazard categories are "Compressed gas", "Liquefied gas", "Refrigerated liquefied gas" and "Dissolved gas". These classes relate to the physical state of the gas when packaged and do not describe the degree of hazard.

In addition, the Reproductive Toxicity hazard class has a separate category called "Effects on or via lactation". "Effects on or via lactation" was not assigned a specific numbered category. Reproductive toxicity also has Categories 1 and 2, which relate to effects on fertility or on the unborn child. Effects on or via lactation are considered a different but related hazard within the Reproductive toxicity class.

What are the main concerns for each physical hazard class?

Hazard Class	General Description
Flammable gases Aerosols Flammable liquids Flammable solids	<p>These four classes cover products that can ignite (catch fire) easily. The main hazards are fire or explosion.</p> <p>Note that the class Aerosols also includes a category for non-flammable aerosols (for products that may be a hazard if they burst when heated).</p>
Oxidizing gases Oxidizing liquids Oxidizing solids	<p>These three classes cover oxidizers, which may cause or intensify a fire or cause a fire or explosion.</p>
Gases under pressure	<p>This class includes compressed gases, liquefied gases, dissolved gases and refrigerated liquefied gases.</p> <p>Compressed gases, liquefied gases and dissolved gases are hazardous because of the high pressure inside the cylinder or container. The cylinder or container may explode if heated.</p> <p>Refrigerated liquefied gases are very cold and can cause severe cold (cryogenic) burns or injury.</p>
Self-reactive substances and mixtures	<p>These products may react on their own to cause a fire or explosion or may cause a fire or explosion if heated.</p>
Pyrophoric liquids Pyrophoric solids	<p>These products can catch fire very quickly (spontaneously) if exposed to air.</p>
Self-heating substances and mixtures	<p>These products may catch fire if exposed to air. These products differ from pyrophoric liquids or solids in that they will ignite only after a longer period of time or when in large amounts.</p>
Substances and mixtures which, in contact with water, emit flammable gases	<p>These products react with water to release flammable gases. In some cases, the flammable gases may ignite very quickly (spontaneously).</p>
Organic peroxides	<p>These products may cause a fire or explosion if heated.</p>
Corrosive to metals	<p>These products may be corrosive (chemically damage or destroy) to metals.</p>
Combustible dust	<p>This class is used to warn of products that are finely divided solid particles. If dispersed in air, the particles may catch fire or explode if ignited.</p>
Simple asphyxiants	<p>These products are gases that may displace oxygen in the air and</p>

Hazard Class	General Description
	cause rapid suffocation.
Physical hazards not otherwise classified	This class is meant to cover any physical hazards that are not covered in any other physical hazard class. These hazards must have the characteristic of occurring by chemical reaction and result in the serious injury or death of a person at the time the reaction occurs. If a product is classified in this class, the hazard statement on the label and SDS will describe the nature of the hazard.
Chemicals under pressure	This class includes liquids or solids that are packaged in a receptacle - other than an aerosol dispenser - and that are pressurized with a gas at a gauge pressure of 200 kPa or more at 20°C but excludes any gas under pressure.

What are the main concerns for each health hazard class?

Hazard Class	General Description
Acute toxicity	<p>Products classified in this hazard class are fatal, toxic or harmful if inhaled, following skin contact, or if swallowed.</p> <p>Acute toxicity refers to effects occurring following skin contact or ingestion exposure to a single dose, or multiple doses given within 24 hours, or an inhalation exposure of 4 hours.</p> <p>Acute toxicity could result from exposure to the product itself, or to a product that, upon contact with water, releases a gaseous substance that is able to cause acute toxicity.</p>
Skin corrosion/irritation	<p>This class covers products that cause severe skin burns (i.e., corrosion, ulcers, bleeding, bloody scabs, etc.) or products that cause skin irritation (reversible damage).</p>
Serious eye damage/eye irritation	<p>This class covers products that cause serious eye damage (i.e., tissue damage in the eye or serious physical decay of vision) or products that cause eye irritation (reversible damage).</p>
Respiratory or skin sensitization	<p>A respiratory sensitizer is a product that may cause allergy or asthma symptoms or breathing difficulties if inhaled (hypersensitivity). Skin sensitizer is a product that may cause an allergic response after skin contact.</p>
Germ cell mutagenicity	<p>This hazard class includes products that may cause or are suspected of causing heritable gene mutations (permanent changes (mutations) to body cells that can be passed on to future generations).</p>
Carcinogenicity	<p>This hazard class includes products that may lead to cancer or may increase the incidence of cancer.</p>
Reproductive toxicity	<p>This hazard class includes products that may damage or are suspected of damaging sexual function and fertility, have adverse effects on the unborn child (embryo, fetus, or offspring), or may have an effect on or through lactation (such as to cause harm to breast-fed children).</p>
Specific target organ toxicity – single exposure	<p>This hazard class covers products that cause or may cause damage to organs (e.g., liver, kidneys, or blood) following a single exposure.</p> <p>This class also includes a category for products that cause respiratory irritation or drowsiness or dizziness.</p>
Specific target organ toxicity – repeated exposure	<p>This hazard class covers products that cause or may cause damage to organs (e.g., liver, kidneys, or blood) following prolonged or repeated exposure.</p>

Hazard Class	General Description
Aspiration hazard	Aspiration is defined as the entry of a liquid or solid into the trachea or lower respiratory system directly through the oral or nasal cavity, or indirectly by vomiting. In other words, aspiration occurs when instead of something going from your mouth or nose to your stomach (other than air), it enters the lungs. Serious health effects can occur such as chemical pneumonia, injury to the lungs, and death.
Biohazardous infectious materials	These materials are microorganisms, nucleic acids or proteins that cause or are a probable cause of infection, with or without toxicity, in humans or animals.
Health hazards not otherwise classified	This class covers hazards that are not included in any other health hazard class. These hazards occur following acute or repeated exposure and have an adverse effect on the health of a person exposed to them. The adverse effects include injuries or death of that person. If a product is classified in this class, the hazard statement will describe the nature of the hazard.

How will I know what hazard class or category is assigned to a hazardous product?

Suppliers must evaluate products that are covered by the Hazardous Products Act against specific criteria as required by the Hazardous Products Regulations. If the product meets any of the criteria for a hazard class, it is known as a hazardous product. All hazardous products must be labelled according to the regulations, and must have a corresponding Safety Data Sheet (SDS). The hazard class and category will be provided in Section 2 (Hazard Identification) of the SDS. Each hazard class or category must use specific pictograms and other label elements to indicate the hazard that is present, and what precautionary measures must be taken. Use the information provided by the label and SDS to be informed and to know how to safely use, handle, store and dispose of the hazardous product.

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