

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 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.

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 governments (for federally regulated workplaces) 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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 - [WHMIS - Legislation](#)
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How does WHMIS classification work?

Suppliers must determine if their products meet the various physical and health properties that are regulated by the Hazardous Products Act and regulations. The specific criteria is listed in the Hazardous Products Regulations. If the product meets any of the criteria for a hazard class, it is considered to be a WHMIS hazardous product.

The official definition of a “hazardous product” is “any product, mixture, material or substance that is classified in accordance with the regulations made under subsection 15(1) in a category or subcategory of a hazard class listed in Schedule 2; (produit dangereux).”

All hazardous products must be labelled according to the Hazardous Products Regulations and must have a corresponding safety data sheet provided to the purchaser at the time of sale.

Employers who produce hazardous products for use in their own workplaces have the duty to assess the hazards, classify the hazards of the products, and provide appropriate labels and safety data sheets to their workers.

Tools to help with classification, such as the [Technical Decision Trees](#) and guidance for classification, are available from [whmis.org](#) and [Health Canada](#).

Please see the OSH Answers on “[WHMIS – Labels](#)” and “[WHMIS – Safety Data Sheets \(SDSs\)](#)” for more information.

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 product's physical or chemical properties, 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).

The Globally Harmonized System of Classification and Labelling of [Chemicals](#) (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 (including 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 the 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 classifications are new for the amended WHMIS?

The key changes in the December 2022 amendments of the Hazardous Products Regulations include:

- Adoption of a new physical hazard class: Chemicals Under Pressure
- A change in the name of the physical hazard class "Flammable Aerosols" to "Aerosols"
- A new hazard category for non-flammable aerosols (Aerosols – Category 3)
- A split in the hazard category Flammable Gases – Category 1 into Categories 1A and 1B
- Inclusion of Pyrophoric gases under Flammable gases – Category 1A instead of being its own hazard class.
- Inclusion of Chemically Unstable Gases into the new Flammable gases – Category 1A
- Mixtures that are classified in one of the health hazard classes that include both categories and subcategories may be classified in an applicable subcategory when there is sufficient data available to do so.
- The classification criteria for water-activated toxicants have changed to be based on the acute inhalation toxicity of the substance or mixture as sold or imported.
- The classification criteria for Reproductive Toxicity – Category 2 has been corrected to specify that adverse effects observed in humans or animals must not be considered as a secondary non-specific consequence of other toxic effects.

What are the main concerns for each physical hazard class?

Hazard Class	General Description
Flammable gases Aerosols Flammable liquids Flammable solids	These four classes cover products that can ignite (catch fire) easily. The main hazards are fire or explosion. Note: • The hazard class under Flammable gases – Category 1A includes Pyrophoric gases and Chemically Unstable Gases. • The hazard class Aerosols also includes a category for non-flammable aerosols (for products that may be a hazard if they burst when heated).
Oxidizing gases Oxidizing liquids Oxidizing solids	These three classes cover oxidizers, which may cause or intensify a fire or cause a fire or explosion.
Gases under pressure	This class includes compressed gases, liquefied gases, dissolved gases and refrigerated liquefied gases. 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. Refrigerated liquefied gases are very cold and can cause severe cold (cryogenic) burns or injury.
Self-reactive substances and mixtures	These products may react on their own to cause a fire or explosion or may cause a fire or explosion if heated.
Pyrophoric liquids Pyrophoric solids	These products can catch fire very quickly (spontaneously) if exposed to air. Note: Pyrophoric gases are now included in the hazard category Flammable gases – Category 1A
Self-heating substances and mixtures	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.
Substances and mixtures which, in contact with water, emit flammable gases	These products react with water to release flammable gases. In some cases, the flammable gases may ignite very quickly (spontaneously).
Organic peroxides	These products may cause a fire or explosion if heated.

Hazard Class	General Description
Corrosive to metals	These products may be corrosive (chemically damage or destroy) to metals.
Combustible dusts	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.
Simple asphyxiants	These products are gases that may displace oxygen in the air and 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 as defined by the <i>Hazardous Products Regulations</i> .

What are the main concerns for each health hazard class?

Hazard Class	General Description
Acute toxicity	Products classified in this hazard class are fatal, toxic or harmful if inhaled, following skin contact, or if swallowed. 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. 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.
Skin corrosion / irritation	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).
Serious eye damage / eye irritation	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).
Respiratory or skin sensitization	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.
Germ cell mutagenicity	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).
Carcinogenicity	This hazard class includes products that may lead to cancer or may increase the incidence of cancer.
Reproductive toxicity	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).
Specific target organ toxicity – single exposure	This hazard class covers products that cause or may cause damage to organs (e.g., liver, kidneys, or blood) following a single exposure. This class also includes a category for products that cause respiratory irritation or drowsiness or dizziness.
Specific target organ toxicity – repeated exposure	This hazard class covers products that cause or may cause damage to organs (e.g., liver, kidneys, or blood) following prolonged or repeated exposure.
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

Hazard Class	General Description
	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?

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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