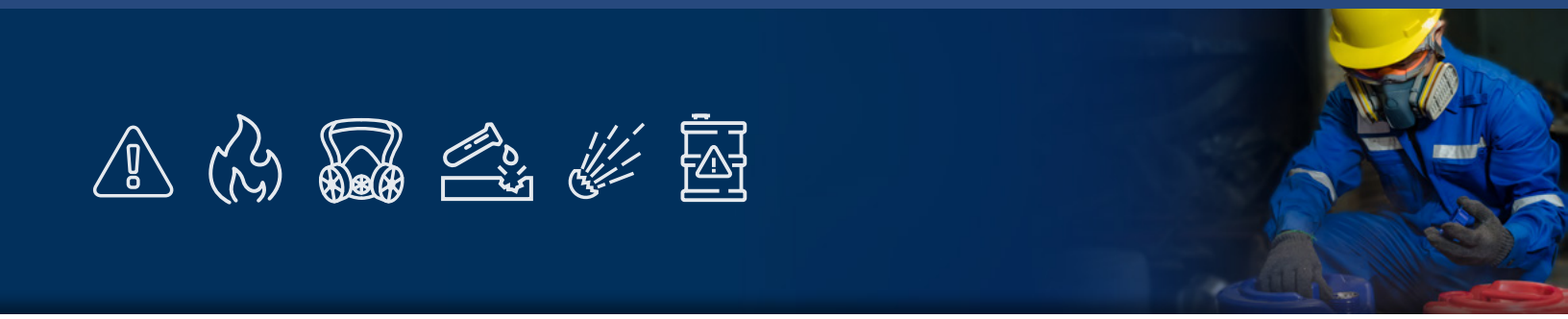
WHMIS Pictograms and Hazard Classes



This document provides more detailed information about the hazard classes and categories associated with the different WHMIS hazard pictograms.

Pictograms are graphic images that immediately show the user of a hazardous product what type of hazard is present. With a quick glance, you can see, for example, that the product is flammable, or if it might be a health hazard.

Most pictograms have a distinctive red "square set on one of its points" border. Inside this border is a symbol that represents the potential hazard (e.g., fire, health hazard, corrosive, etc.). Together, the symbol and the border are referred to as a pictogram. Pictograms are assigned to specific hazard classes or categories.

Physical hazard classes

Pictogram name: Exploding bomb

Explosion or Reactivity Hazards

Self-reactive substances and mixtures (Type A, B)

May react on their own to cause a fire or explosion, or may cause a fire or explosion if heated.

Organic peroxides (Types A, B)

Unstable substances or mixtures, which, at certain temperatures, may decompose with releases of heat. They may have one or more of the following properties:

- could decompose explosively
- burn rapidly
- be sensitive to impact or friction
- react dangerously with other substances

Note: Both Flame and explosive symbols are used for Self Reactive Substances and Mixtures (Type B) and Organic Peroxide (Type B).

Explosives

These products are capable of producing gas at such temperature, pressure, and speed that can damage the surroundings.

Note: WHMIS did not adopt the Explosives hazard class because in Canada explosives are covered under a different legislation.

Pictogram name: Flame

Fire Hazards

Flammable gases (Category 1A, 1B)

Burn if ignited by a spark, static discharge, or hot surfaces; Category 1A- Pyrophoric gases can ignite spontaneously in the air; Category 1A-Chemically unstable gases react explosively even in the absence of air or oxygen.

Aerosols (Category 1, Category 2)

Aerosols are non-refillable containers that contain a compressed gas with or without a liquid, paste, or powder and that have a release device that allows the content to be released as solid or liquid particles in suspension in a gas, as a foam, paste, or powder or in a liquid state or a gaseous state. The aerosols classified in categories 1 and 2 are flammable.

Flammable liquids (Category 1, 2, 3)

Will burn if ignited by a flame, spark, static discharge, or a hot surface (e.g., hot plate). These liquids form vapours that will "flash" or briefly ignite at temperatures lower than 93 degrees Celsius.

Flammable solids (Category 1, 2)

Solids that are readily combustible or may cause fire through friction.

Pyrophoric liquids (Category 1)

Even small amounts can ignite within 5 minutes after exposure to the air.

Pyrophoric solids (Category 1)

Even small amounts can ignite within 5 minutes after exposure to the air.

Self-reactive substances and mixtures (Types B, C, D, E, F)

May react on their own to cause a fire or explosion, or may cause a fire or explosion if heated.

Self-heating substances and mixtures (Category 1, 2)

When in large amounts (kilograms), or after long periods of time (hours or days), can self-heat and catch fire without any energy supply.

Substances and mixtures which in contact with water emit flammable gases (Category 1, 2, 3)

In contact with water may become spontaneously flammable or release flammable gases in dangerous quantities.

Organic peroxides (Types B, C, D, E, F)

Unstable substances or mixtures, which, at certain temperatures, may decompose with releases of heat. They may have one or more of the following properties:

- could decompose explosively;
- burn rapidly;
- be sensitive to impact or friction;
- react dangerously with other substances.

Chemicals Under Pressure (Category 1, 2)

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. The products classified in Chemicals Under Pressure - Category 1 and 2 are flammable, and may explode if heated.

Note: For chemicals under pressure (Categories 1 and 2) both the flame and gas cylinder symbols are used.

Pictogram name: Flame over circle

Oxidizing Harzards

Oxidizing Gases (Category 1)

Gases that provide oxygen and contribute to the combustion of other materials.

Oxidizing liquids (Category 1, 2, and 3)

Liquids that provide oxygen and contribute to the combustion of other materials.

Oxidizing solids (Category 1, 2, and 3)

Solids that provide oxygen and contribute to the combustion of other materials.

Pictogram name: Gas cylinder

Gases and Chemicals Under Pressure

Gases under pressure (Compressed gas, Liquefied gas, Refrigerated liquefied gas, and Dissolved gas)

These 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.

Chemicals under pressure (Category 1, 2 and 3)

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. These products may explode if heated.

Note: Products classified in Categories 1 and 2 are also flammable and are assigned the flame symbol.'

Pictogram name: Corrosion

Corrosive to metals (Category 1)

Destroy the metals through chemical reaction.

Pictogram name: n/a

Hazards With No Symbol

Simple asphyxiants (Category 1)

Gases that can cause asphyxiation by the displacement of oxygen.

Gases such as nitrogen, helium, and argon can displace the oxygen in the air. A person may die of asphyxia if there was a leak of such gas in an enclosed space.

Combustible dusts (Category 1)

Mixtures or substances that are in the form of finely divided solid particles that, upon ignition, are liable to catch fire or explode when dispersed in the air.

Mixtures or substances that are in the form of finely divided solid particles that, upon ignition, are liable to catch fire or explode when dispersed in the air.

Others

Some of the less hazardous categories in a class do not have an assigned symbol, e.g.,Flammable liquids Category 4, Flammable gases Category 2 and Aerosols Category 3.

Pictogram name: n/a

Hazards With Any Symbol

Products that present physical hazards that are not classified in any of the classes already established can be classified in Physical Hazards Not Otherwise Classified (PHNOC). This class may be represented by any of the physical hazard symbols that is appropriate to the hazard.

Pictogram name: multiple

Multiple symbols

Categories 1 and 2 of the Chemicals Under Pressure hazard class are assigned two hazard symbols: the flame and the compressed gas.

Organic peroxides Type B, and Self Reacting Substances and mixtures Type B, are also assigned two hazard symbols: the flame and exploding bomb.

Health hazard classes

Pictogram name: Corrosion

Corrosive Damage to Skin and Eyes

Skin Corrosion / Irritation - Skin corrosion (Category 1, 1A, 1B, 1C)

Products that cause irreversible damage to the skin (i.e., corrosion, ulcers, bleeding, bloody scabs, etc.).

Serious Eye Damage / Irritation - Serious eye damage (Category 1)

Products that cause serious eye damage (i.e., tissue damage in the eye or serious physical decay of vision).

Pictogram name: Skull and crossbones

Death or Toxicity After Short Exposure

Acute Toxicity – Oral, dermal, inhalation (Category 1, 2, 3)

Acute toxicity is classified for each route of exposure (oral, dermal, inhalation). Products classified in this hazard class are fatal, toxic or harmful if inhaled, following skin contact, or if swallowed after 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.

Pictogram name: Health hazard

Serious Health Effects

Respiratory or skin sensitization - Respiratory sensitizer (Category 1, 1A, 1B)

A respiratory sensitizer is a product that may cause allergy or asthma symptoms or breathing difficulties if inhaled (hypersensitivity).

The airways or the skin become hypersensitive after inhalation or skin contact with these substances or mixtures.

Germ Cell Mutagenicity (Category 1, 1A, 1B, 2)

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).

May cause genetic defects or is suspected of causing genetic defects. Mutations can lead to birth defects or cancer.

Carcinogenicity (Category 1, 1A, 1B, 2)

Includes products that may lead to cancer or may increase the incidence of cancer (i.e., products that may cause cancer or are suspected of causing cancer).

Reproductive Toxicity (Category 1, 1A, 1B, 2)

This hazard class includes products that may damage or are suspected of damaging sexual function and fertility or have adverse effects on the unborn child (embryo, fetus, or offspring).

May damage fertility or the unborn child or is suspected of damaging fertility or the unborn child. The Reproductive Toxicity class includes an additional category for substances that may affect the child through lactation (effects on or via lactation). This category does not have a symbol.

Specific Target Organ Toxicity – Single Exposure (Category 1, 2)

This hazard class covers products that cause or may cause damage to organs (e.g., liver, kidneys, or blood) following a single exposure.

Causes or may cause a specific, but not fatal, target organ toxicity (e.g., damage to liver, kidneys, or blood) that occurs from a single exposure only.

Specific Target Organ Toxicity – Repeated Exposure (Category 1, 2)

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 (Category 1)

Aspiration is defined as the entry of a liquid or solid into the trachea or lower respiratory system directly though 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.

Pictogram name: Exclamation mark

Less Serious Health Effects

Acute Toxicity – Oral, dermal, inhalation (Category 4)

Harmful if inhaled, through contact with skin, or if swallowed after exposure to a single dose, or multiple doses given within 24 hours, or an inhalation exposure of 4 hours.

Skin Corrosion / Irritation – Skin irritation (Category 2)

Causes skin irritation (reversible).

Serious Eye Damage / Eye Irritation – Eye irritation – (Category 2)

Causes eye irritation (reversible).

Respiratory or skin sensitization – Skin sensitizer (Category 1)

Skin sensitizer is a product that may cause an allergic response after skin contact.

Specific Target Organ Toxicity – Single Exposure (Category 3)

Products classified in Category 3 of this class may cause drowsiness or dizziness, or may cause respiratory irritation.

Pictogram name: Biohazardous infectious materials

Biohazardous Infectious Materials

Biohazardous Infectious Materials (Category 1)

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.

Pictogram name: n/a

Hazards With Any Symbol

Health Hazards Not Otherwise Classified (HHNOC)

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. This class can be represented by any of the health hazards symbols that would be appropriate for the hazard.

Pictogram name: n/a

Hazards With No Symbol

Some of the less hazardous categories do not have an assigned symbol.

E.g., Serious eye damage / Eye Irritation - Category 2B and Reproductive toxicity – Effects on or via lactation.