

# WHMIS 2015

## At Work



## About WorkSafeBC

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At WorkSafeBC, we're dedicated to promoting safe and healthy workplaces across B.C. We partner with workers and employers to save lives and prevent injury, disease, and disability. When work-related injuries or diseases occur, we provide compensation and support injured workers in their recovery, rehabilitation, and safe return to work. We also provide no-fault insurance and work diligently to sustain our workers' compensation system for today and future generations. We're honoured to serve the workers and employers in our province.

## Prevention Information Line

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We provide information and assistance with health and safety issues in the workplace.

Call the information line 24 hours a day, 7 days a week to report unsafe working conditions, a serious incident, or a major chemical release. Your call can be made anonymously. We can provide assistance in almost any language.

If you have questions about workplace health and safety or the Occupational Health and Safety Regulation, call during our office hours (8:05 a.m. to 4:30 p.m.) to speak to a WorkSafeBC officer.

If you're in the Lower Mainland, call 604.276.3100. Elsewhere in Canada, call toll-free at 1.888.621.7233 (621.SAFE).

# WHMIS 2015

At Work

## Health and safety resources

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You can find our health and safety resources on [worksafebc.com](https://worksafebc.com), and many of them can be ordered from the WorkSafeBC Store at [worksafebcstore.com](https://worksafebcstore.com).

In addition to books, you'll find other types of resources at the WorkSafeBC Store, including DVDs, posters, and brochures. If you have any questions about placing an order online, please contact a customer service representative at 604.232.9704 or toll-free at 1.866.319.9704.

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# Contents

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<b>Acknowledgments</b> .....	<b>vi</b>
<b>Introduction</b> .....	<b>1</b>
<b>1. What is WHMIS?</b> .....	<b>3</b>
Overview of WHMIS .....	4
WHMIS gets an update .....	4
Key elements of WHMIS 2015 .....	5
Products covered by WHMIS 2015 .....	7
Products not covered by WHMIS 2015 .....	8
Enforcement and inspections .....	9
Overview of responsibilities .....	10
<b>2. Classification of hazardous products</b> .....	<b>13</b>
How hazardous products are classified in WHMIS 2015 .....	14
Physical hazards .....	15
Health hazards .....	15
Hazard classes .....	16
Hazard categories .....	19
Preparing to classify a product .....	20
<b>3. Pictograms</b> .....	<b>21</b>
Overview of WHMIS 2015 pictograms .....	22
How pictograms compare to WHMIS 1988 hazard symbols ..	24
How pictograms are used with WHMIS 2015 hazard classes and categories .....	25
Hazard classes and categories without pictograms .....	28
Where to find pictograms .....	29
<b>4. Labels</b> .....	<b>31</b>
Labelling hazardous products .....	32
Overview of label types .....	33
Supplier labels .....	34
Information required .....	34
Format .....	35
About signal words .....	36
About hazard statements .....	36
About precautionary statements .....	36
About slashes and dots on supplier labels .....	37

Updating supplier labels . . . . .	38
Sample supplier labels: WHMIS 1988 vs. WHMIS 2015 . . . . .	38
Supplier label requirements for shipments . . . . .	40
Workplace labels . . . . .	41
Format . . . . .	41
When workplace labels are required . . . . .	41
When employers produce hazardous products . . . . .	42
Updating workplace labels . . . . .	42
Other permitted identification or labelling systems . . . . .	43
Labelling laboratory samples . . . . .	43
What workers should do when using a hazardous product . . . . .	45
<b>5. Safety data sheets . . . . .</b>	<b>47</b>
About safety data sheets . . . . .	48
Format and information required . . . . .	48
Why SDSs can be difficult to understand . . . . .	50
Sample SDS . . . . .	51
When workers should use SDSs . . . . .	60
The meaning of “not available” or “not applicable” on an SDS . . . . .	60
MSDS headings vs. SDS headings . . . . .	61
Looking beyond an SDS for more information . . . . .	63
Updating SDSs . . . . .	64
How to find out if an SDS has been updated . . . . .	64
Responsibilities for SDSs . . . . .	65
Suppliers . . . . .	65
Employers . . . . .	65
Confidential business information (“trade secrets”) . . . . .	67
<b>6. Education and training . . . . .</b>	<b>69</b>
About WHMIS education and training for workers . . . . .	70
Who should receive education and training? . . . . .	70
Who should provide the education and training? . . . . .	71
Topics to be covered . . . . .	71
Duties for education and training . . . . .	72
Employers . . . . .	72
Workers . . . . .	72
Implementing WHMIS 2015 in your workplace . . . . .	74
What are safe work procedures? . . . . .	74
Sample safe work procedure . . . . .	75

<b>7. Tables and checklists</b> . . . . .	<b>77</b>
WHMIS 2015 information items on a supplier label . . . . .	78
Information items on an SDS (full list) . . . . .	79
WHMIS 2015 implementation plan checklist . . . . .	83
WHMIS 2015 education and training checklist . . . . .	86
<b>8. Resources</b> . . . . .	<b>89</b>
WorkSafeBC resources . . . . .	90
Other sources of information . . . . .	92
Organizations . . . . .	92
Federal legislation . . . . .	93

# Acknowledgments

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# Introduction

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Workers exposed to hazardous products may be at risk for many serious health problems, such as kidney or lung damage, sterility, cancer, allergic reactions, or burns. Some hazardous products can also cause fires or explosions.

The Workplace Hazardous Materials Information System (WHMIS) provides health and safety information about hazardous products in the workplace. Employers must use this information, as well as information specific to their workplaces, to educate and train workers to work safely with and near hazardous products.

This book explains the basics of WHMIS and answers some commonly asked questions. After reading this book, employers and workers should be able to understand how WHMIS information can help workers to work safely with and near hazardous products.

- Chapter 1 gives an overview of WHMIS and its goals, as well as the key changes from the original WHMIS to the updated WHMIS 2015. It briefly describes the four main elements of WHMIS 2015 (classification, labels, safety data sheets, and education and training) and the responsibilities of suppliers, employers, and workers.
- Chapter 2 explains how hazardous products are classified in WHMIS 2015, including descriptions of the new hazard groups, classes, and categories.
- Chapter 3 introduces the WHMIS 2015 pictograms and explains how they are used.
- Chapter 4 explains the requirements for WHMIS 2015 supplier and workplace labels.
- Chapter 5 describes the WHMIS 2015 safety data sheets (SDSs), including the information required on an SDS and the responsibilities of suppliers and employers.
- Chapter 6 describes WHMIS education and training requirements and the implementation of education and training programs.
- Chapter 7 includes tables outlining information on supplier labels and SDSs, and provides checklists for implementing WHMIS and education and training programs.
- Chapter 8 includes a list of resources for more WHMIS information.



# 1 What is WHMIS?

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# Overview of WHMIS

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The Workplace Hazardous Materials Information System (WHMIS) provides Canadian workers with information about hazardous products used in the workplace. Under WHMIS, workers have the right to receive information about each hazardous product they use, handle, or store (for example, its identity, hazards, and safety precautions). The goal of WHMIS is to reduce injury and disease by communicating specific health and safety information about hazardous products to workers. Workers can use this information to reduce their exposure to hazardous products.

## WHMIS gets an update

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WHMIS first came into effect in 1988 through a series of complementary federal, provincial, and territorial laws and regulations. It was updated in early 2015 to reflect elements of a new initiative called the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). Developed by the United Nations, GHS:

- Defines and classifies the hazards of chemical products
- Provides health and safety information on labels and safety data sheets, or SDSs (previously called material safety data sheets or MSDSs in the original WHMIS)

The goal of GHS is that the same set of rules for classifying hazardous products, and the same format and content for labels and SDSs, will be adopted and used around the world.

Currently, many countries have different systems for classifying and labelling hazardous products. Several different systems can exist even within the same country. This situation has been confusing for workers who need to understand the hazards of products in order to work safely. It's also been costly for companies that have to comply with many different systems. And it's been expensive for governments to regulate and enforce.

GHS has not replaced WHMIS. Instead, WHMIS has been aligned with GHS. This has led to many benefits, such as:

- Providing improved, consistent hazard information
- Encouraging the safe handling and use of hazardous products
- Promoting better emergency response
- Making it easier and less expensive for companies to comply
- Making trade easier
- Reducing the costs of regulation and enforcement

For the sake of clarity, the original WHMIS is now referred to as WHMIS 1988. The updated version is called WHMIS 2015.

Key changes from WHMIS 1988 to WHMIS 2015 include the following:

- Hazard classification criteria are more comprehensive. This improves the ability to indicate the severity of hazards.
- New hazard classes are included (for example, “Aspiration hazard”).
- Physical hazard criteria are consistent with the Transportation of Dangerous Goods (TDG) Regulations.
- The language has been standardized.
- Supplier labels have a few new requirements (for example, the use of prescribed signal words, hazard statements, pictograms, and precautionary statements).
- SDSs follow a standard 16-section format with specific information requirements.

By late 2018, all suppliers and employers were required to comply with WHMIS 2015. WHMIS 1988 no longer applies.

## Key elements of WHMIS 2015

GHS also defines an environmental hazards group. This group (and its classes) was not adopted in WHMIS 2015 since it is beyond the scope of WHMIS legislation (i.e., workplaces).

- **Classification**

WHMIS 2015 divides hazardous products into two major hazard groups: physical hazards and health hazards.

The physical and health hazard groups are split up into a number of classes. Some of the classes are divided even further into categories. The classes are depicted by pictograms (symbols surrounded by red, diamond-shaped borders) that identify their specific hazards. (For more information on classification, see page 14.) After a hazardous product has been classified, the following three WHMIS elements are used to communicate health and safety information.

- **WHMIS labels**

Labels on hazardous products alert workers to the identities of the products, their hazards, and precautions to be taken. Under WHMIS 2015, these labels must display some elements in a certain order. The hazard statements and precautionary statements have been standardized.

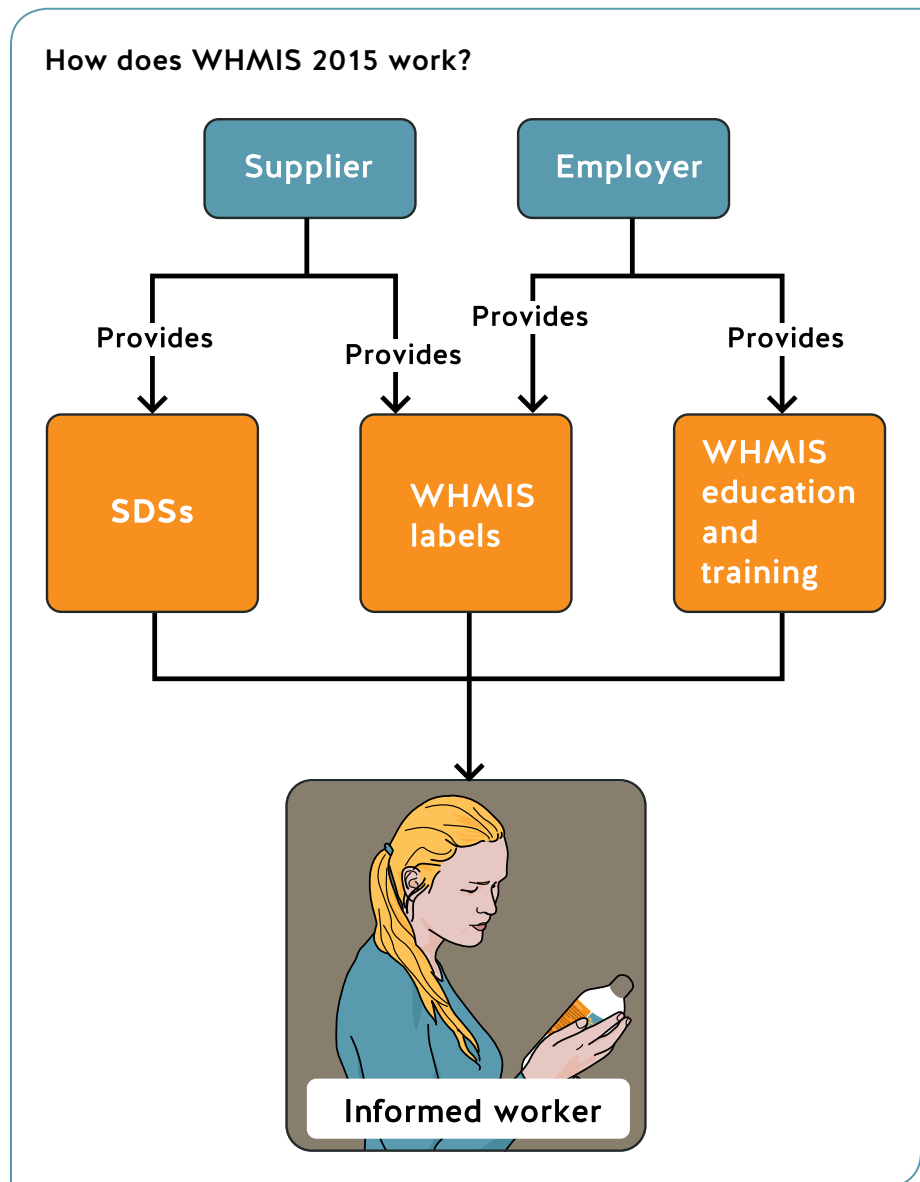
- **Safety data sheets (SDSs)**

These documents provide detailed hazard and precautionary information. Under WHMIS 2015, SDSs use a 16-section format. The information required in each section has been standardized.

- **WHMIS education and training programs**

Employers provide education and training for workers so that they can work safely with and near hazardous products. Workers need to know how WHMIS works, the hazards of hazardous products in their workplaces, and the safe work procedures they must follow.

**Note:** Not all hazardous products in the workplace are sold with WHMIS labels and safety data sheets. Some hazardous products are sold with labelling and hazard information meeting the requirements of other legislation. These products are either exempt or excluded from WHMIS requirements (see page 8).



# Products covered by WHMIS 2015

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The federal Hazardous Products Regulations (HPR) came into effect in early 2015 and replaced the Controlled Products Regulations. The HPR sets out the criteria for classifying hazards. If a product covered by the *Hazardous Products Act* meets the criteria to be included in a hazard class or category, it is considered to be a hazardous product. All hazardous products used in the workplace are covered by the WHMIS 2015 regulations, and a WHMIS program — including education and training — must be in place.

# Products not covered by WHMIS 2015

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The exclusions under WHMIS 2015 are:

- Explosives (as defined in the *Explosives Act*)
- Cosmetics, devices, drugs, or foods (as defined in the *Food and Drugs Act*)
- Pest control products (as defined in the *Pest Control Products Act*)
- Consumer products (as defined in the *Canada Consumer Product Safety Act*)
- Wood or products made of wood
- Nuclear substances, within the meaning of the *Nuclear Safety and Control Act*, that are radioactive
- Hazardous waste (being a hazardous product that is sold for recycling or recovery and is intended for disposal)
- Tobacco and tobacco products (as defined in the *Tobacco Act*)
- Manufactured articles

Many of these products are covered under other laws, as noted above. While a product may be exempt from the requirement to have a WHMIS label and SDS, employers must still provide education and training on health effects, safe use, and storage.

The rest of this book deals with hazardous products that require WHMIS supplier labels and SDSs (i.e., products that are not exempt from WHMIS 2015).

## When consumer products are used in the workplace

Consumer products are those products that can be purchased in a store and are generally intended to be used in the home. They often include cleaning products, adhesives, or lubricants. These products are labelled according to other legislation. A comprehensive chemical safety program would include both hazardous products as regulated by WHMIS, and any other products that a worker may be exposed to (which includes consumer products). Workers should still receive education and training for safe use of these products.



# Enforcement and inspections

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WorkSafeBC enforces WHMIS in most workplaces in B.C. The federal Labour Program enforces WHMIS in federally regulated workplaces.

Inspectors have the authority to ensure that occupational health and safety legislation is being followed.

For WHMIS, for example, employers should be prepared to:

- Demonstrate that a WHMIS program is in place
- Show where the SDSs are for the hazardous products used at that workplace
- Show that hazardous products in use have the appropriate labels
- Show education and training records for employees who work with or may be exposed to a hazardous product

Inspectors may need to speak to workers to confirm that education and training have taken place. Workers should be able to answer these questions for every hazardous product they work with:

- What are the hazards of the product?
- How do I protect myself from those hazards?
- What do I do in case of an emergency?
- Where can I get further information?

# Overview of responsibilities

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## In brief

The roles and responsibilities for suppliers, employers, and workers remain unchanged in WHMIS 2015.

The purpose of WHMIS is to reduce the likelihood of disease or injury in the workplace. WHMIS 2015 is the result of a collaborative effort between the federal, provincial, and territorial occupational health and safety agencies. It includes input from supplier, employer, and worker representatives.

WHMIS legislation exists at both the federal and provincial levels.

**Federal legislation** (i.e., the *Hazardous Products Act* and the *Hazardous Products Regulations*) establishes which products are regulated under WHMIS 2015 and deals with either the importation or sale of these materials. Federal legislation defines suppliers as organizations or individuals who do any of the following in the course of business:

- Manufacture, sell, or distribute hazardous products in Canada
- Import hazardous products into Canada

**Provincial legislation** (in B.C., the *Workers Compensation Act* and the *Occupational Health and Safety Regulation*) covers the use of hazardous products in the workplace and identifies employers' responsibilities. Workers who work with or near hazardous products must know how to use, handle, and store them safely.

The following table summarizes the responsibilities of the various groups identified by WHMIS legislation. The roles and responsibilities of suppliers, employers, and workers have not changed in WHMIS 2015.

**Table 2. Group responsibilities**

<b>Suppliers</b>
<ul style="list-style-type: none"><li>• Ensure the appropriate classification of hazardous products.</li><li>• Obtain or prepare up-to-date labels and SDSs for all hazardous products they sell or produce.</li><li>• Provide these labels and SDSs to purchasers of hazardous products intended for use in a workplace.</li></ul>
<b>Employers</b>
<ul style="list-style-type: none"><li>• Educate and train workers on the hazards and safe use of hazardous products in the workplace.</li><li>• Ensure that hazardous products are properly labelled.</li><li>• Prepare workplace labels and SDSs (as necessary).</li><li>• Ensure that up-to-date SDSs are readily available to workers.</li><li>• Ensure effective control measures are in place to protect the health and safety of workers.</li></ul>
<b>Workers</b>
<ul style="list-style-type: none"><li>• Participate in WHMIS and chemical safety training programs.</li><li>• Take necessary steps to protect themselves and their co-workers.</li><li>• Participate in identifying and controlling hazards.</li></ul>
<b>WorkSafeBC staff</b>
<ul style="list-style-type: none"><li>• Administer WHMIS legislation.</li><li>• Provide general information about WHMIS to employers and workers.</li><li>• Ensure compliance with both federal and provincial WHMIS legislation.</li></ul>

Note that supplier labels and workplace labels are explained starting on page 33 and SDSs on page 48.

### **When an employer becomes a supplier**

If employers import or produce a hazardous product, even if it is for their own use, they are considered to be the supplier of the hazardous product. This means they must provide an up-to-date SDS and attach a supplier label.



# 2 Classification of hazardous products

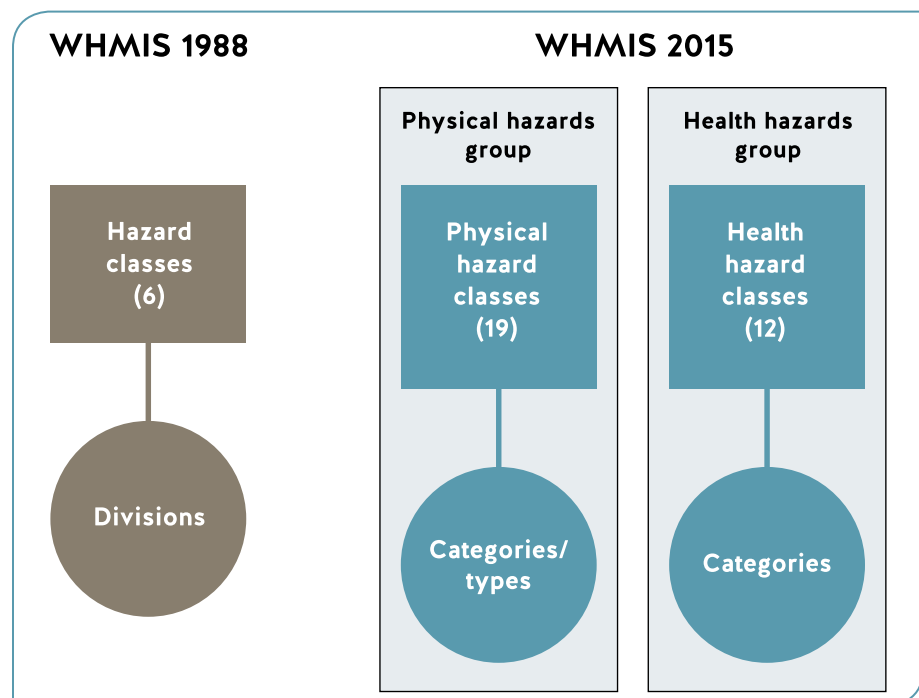
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# How hazardous products are classified in WHMIS 2015

The way that hazardous products are classified has changed in WHMIS 2015. Hazardous products are now divided into two **hazard groups**:

- **Physical hazards**, based on the physical or chemical properties of the product, such as flammability, reactivity, or corrosivity to metals
- **Health hazards**, 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)
  - Carcinogenicity (may cause cancer)

The two hazard groups are further divided into **hazard classes**. A brief listing of the hazard classes in each hazard group is shown on the next page, followed by an overview of the classes. Hazard classes are a way of grouping together products that have similar properties.



The figure above gives a high-level overview of how the WHMIS classification system has changed. In WHMIS 1988, controlled products were divided into hazard classes, which were further split into divisions. In WHMIS 2015, hazardous products are divided into two hazard groups. Each hazard group is divided into hazard classes. Each hazard class contains categories or types.

## Physical hazards

The physical hazards group includes the following hazard classes:

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

**Note:** Explosives are classified as physical hazards under GHS. And the “exploding bomb” pictogram appears in WHMIS 2015 because some hazardous products can explode. However, explosives are not included in WHMIS 2015 because they are covered by other legislation.

## Health hazards

The health hazards group includes the following hazard classes:

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

**Note:** An environmental hazards group exists in GHS. This group (and its classes) was not adopted in WHMIS 2015 since it is beyond the scope of WHMIS legislation (i.e., workplaces). However, you may see the environmental classes listed on labels and SDSs. Including information about environmental hazards is allowed by WHMIS 2015.

## Hazard classes

A hazardous product is a product that falls into one or more of the hazard classes described below. Suppliers classify these products and assign one or more of the appropriate pictograms (symbols or graphic images surrounded by borders; see page 23).

The following are only brief descriptions of each of the hazard classes.

**Table 3. Overview of physical hazard classes**

Physical hazard class	General description
<b>Flammable gases; Flammable aerosols; Flammable liquids; Flammable solids</b>	These four classes cover products that have the ability to ignite (catch fire) easily. The main hazards are fire or explosion.
<b>Oxidizing gases; Oxidizing liquids; Oxidizing solids</b>	These three classes cover oxidizers, which may cause or intensify a fire, or cause a fire or explosion.
<b>Gases under pressure</b>	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.
<b>Self-reactive substances and mixtures</b>	These products may react on their own to cause a fire or explosion, or may cause a fire or explosion if heated.
<b>Pyrophoric liquids; Pyrophoric solids; Pyrophoric gases</b>	These products can catch fire very quickly (spontaneously) if exposed to air.
<b>Self-heating substances and mixtures</b>	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.
<b>Substances and mixtures which, in contact with water, emit flammable gases</b>	As the class name suggests, these products react with water to release flammable gases. In some cases, the flammable gases may ignite very quickly (spontaneously).



Physical hazard class	General description
Organic peroxides	These products are unstable, highly reactive, or explosive. They may cause a fire or explosion if heated.
Corrosive to metals	These products may be corrosive (chemically damaging or destructive) 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 (take the place of) oxygen in 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 involve chemical reactions that result in serious injuries or deaths when the reactions occur. If a product is classified in this class, the hazard statement on the label and SDS will describe the nature of the hazard.

**Table 4. Overview of health hazard classes**

Health hazard class	General description
<b>Acute toxicity</b>	<p>These products are fatal, toxic, or harmful if inhaled, if in contact with skin, or if swallowed.</p> <p>Acute toxicity refers to effects occurring following:</p> <ul style="list-style-type: none"> <li>• Skin contact or ingestion exposure to: <ul style="list-style-type: none"> <li>– A single dose, or</li> <li>– Multiple doses given within 24 hours</li> </ul> </li> <li>• An inhalation exposure of four hours</li> </ul> <p>Acute toxicity could result from exposure to the product itself. It could also result from a product that, upon contact with water, releases a gaseous substance that can cause acute toxicity.</p>
<b>Skin corrosion /irritation</b>	This class covers products that cause severe skin burns (i.e., corrosion) and products that cause skin irritation.
<b>Serious eye damage /eye irritation</b>	This class covers products that cause serious eye damage (i.e., corrosion) and products that cause eye irritation.


Health hazard class	General description
<b>Respiratory or skin sensitization</b>	A respiratory sensitizer is a product that may cause allergy or asthma symptoms or breathing difficulties if inhaled. A skin sensitizer is a product that may cause an allergic skin reaction.
<b>Germ cell mutagenicity</b>	This hazard class includes products that may cause or are suspected of causing genetic defects. Genetic defects are permanent changes (mutations) to body cells that can be passed on to future generations.
<b>Carcinogenicity</b>	This hazard class includes products that cause or are suspected of causing cancer.
<b>Reproductive toxicity</b>	This hazard class includes products that may damage or are suspected of damaging fertility or the embryo, fetus, or offspring. Note: There is an additional category that includes products that may cause harm to breast-fed children.
<b>Specific target organ toxicity – single exposure</b>	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, drowsiness, or dizziness.
<b>Specific target organ toxicity – repeated exposure</b>	This hazard class covers products that cause or may cause damage to organs (e.g., liver, kidneys, or blood) following prolonged or repeated exposure.
<b>Aspiration hazard</b>	This hazard class is for products that may be fatal if they are swallowed and enter the airways.
<b>Biohazardous infectious materials</b>	These materials are micro-organisms (e.g., viruses, bacteria, or fungi), nucleic acids (e.g., DNA or RNA), or proteins that cause or are probable causes of infection, with or without toxicity, in humans or animals.
<b>Health hazards not otherwise classified</b>	This class covers products that are not included in any other health hazard class. These hazards occur following acute or repeated exposure and have adverse effects on the health of a person exposed to them — including injury or death. If a product is classified in this class, the hazard statement will describe the nature of the hazard.

## Hazard categories

Each hazard class contains at least one category. The hazard categories are assigned a number (1, 2, etc.). Categories may also be called “types.” Types are assigned an alphabetical letter (A, B, etc.). In a few cases, subcategories are also specified.

Subcategories are identified with a number and a letter (for example, 1A and 1B).

Some hazard classes have only one category (for example, “Corrosive to metals”). Others may have two categories (for example, “Carcinogenicity” [cancer]) or three categories (for example, “Oxidizing liquids”). There are a few hazard classes with five or more categories (for example, “Organic peroxides”).

Hazard category	Level of hazard
1	More hazardous
2A	
2B	
3	Less hazardous

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

- Category 1 is always the greatest level of hazard (i.e., 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 and/or or the embryo, fetus, or offspring. “Effects on or via lactation” is considered a different, but related hazard within the “Reproductive toxicity” class.

# Preparing to classify a product

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To prepare to classify a product, suppliers should:

- (1) Refer to the classification criteria laid out in Part 2 of the Hazardous Products Regulations. (Follow the link to the HPR on page 93 of this book.)
- (2) Identify the relevant hazard data for products.
- (3) Review the data in light of the classification criteria to determine the appropriate hazard classes and categories. Note that specific guidance for classifying mixtures for health hazards is provided in Part 8 of the Hazardous Products Regulations.
- (4) Document the rationale and information for future reference.

Classification must be determined based on comparison of all available hazard data to the criteria in the Hazardous Products Regulations. The data used must be scientifically sound and valid.

# 3 Pictograms

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# Overview of WHMIS 2015 pictograms

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## What's new











- Pictograms show the type of hazard at a glance.
- There are 10 pictograms.
- Most pictograms have a red, diamond-shaped border.
- Pictograms are assigned to specific hazard classes or categories.

Pictograms are graphic images that immediately show you what type of hazard a hazardous product presents. 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, diamond-shaped border. Inside this border is a symbol that represents the potential hazard (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.

The following table shows the pictograms. The name of each pictogram is in bold type. The words in the brackets describe the hazard.

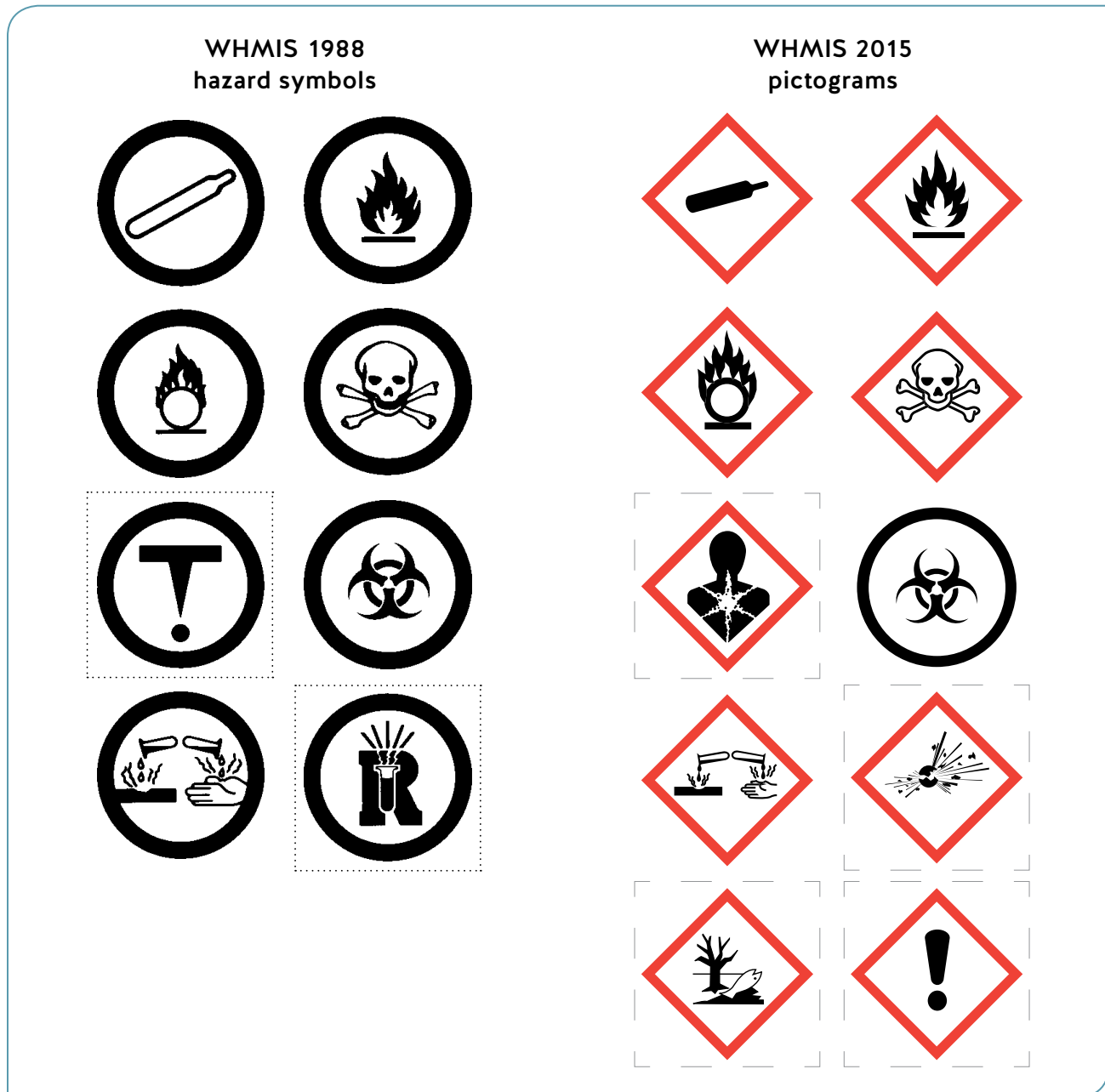
**Table 5. Introducing the pictograms**

	<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)

\* An environmental hazards group exists in GHS. This group (and its classes) was not adopted in WHMIS 2015. However, you may see the environmental classes listed on labels and SDSs. Including information about environmental hazards is allowed by WHMIS 2015.

\*\* The “Biohazardous infectious materials” hazard class was included in WHMIS 1988 but is not part of GHS. This class has been retained in WHMIS 2015 to maintain worker protection.

# How pictograms compare to WHMIS 1988 hazard symbols



In general, pictograms (at right) are similar to WHMIS 1988 hazard symbols (at left). Many of the inner symbols are almost identical. However, there are some new symbols (the ones within the “Health hazard,” “Exploding bomb,” “Environment,” and “Exclamation mark” pictograms, highlighted by dashed lines above right). And two symbols (in the “Materials causing other toxic effects” and “Dangerously reactive material” hazard symbols, highlighted by dotted lines above left) have been retired. In all but one case (“Biohazardous infectious materials”), the pictogram borders are red and diamond-shaped. And most pictograms are assigned to multiple hazard classes and categories.





# How pictograms are used with WHMIS 2015 hazard classes and categories






## For more information

For more information on the meaning of the categories, refer to Annex 1 (Classification and Labelling Summary Tables) of the United Nations publication *Globally Harmonized System of Classification and Labelling of Chemicals (GHS): Fifth revised edition*.  
[unece.org/fileadmin/DAM/trans/danger/publi/ghs/ghs\\_rev05/English/05e\\_annex1.pdf](http://unece.org/fileadmin/DAM/trans/danger/publi/ghs/ghs_rev05/English/05e_annex1.pdf)

The pictograms are associated with the hazard classes and categories as follows.



**Table 6. Pictograms matched to hazard classes and categories**

Pictogram	Hazard classes and categories
	<p>The <b>flame</b> pictogram is used for the following classes and categories:</p> <ul style="list-style-type: none"> <li>• Flammable gases (Category 1)</li> <li>• Flammable aerosols (Categories 1 and 2)</li> <li>• Flammable liquids (Categories 1, 2, and 3)</li> <li>• Flammable solids (Categories 1 and 2)</li> <li>• Pyrophoric liquids (Category 1)</li> <li>• Pyrophoric solids (Category 1)</li> <li>• Pyrophoric gases (Category 1)</li> <li>• Self-heating substances and mixtures (Categories 1 and 2)</li> <li>• Substances and mixtures which, in contact with water, emit flammable gases (Categories 1, 2, and 3)</li> <li>• Self-reactive substances and mixtures (Types B*, C, D, E, and F)</li> <li>• Organic peroxides (Types B*, C, D, E, and F)</li> </ul>
	<p>The <b>flame over circle</b> pictogram is used for the following classes and categories:</p> <ul style="list-style-type: none"> <li>• Oxidizing gases (Category 1)</li> <li>• Oxidizing liquids (Categories 1, 2, and 3)</li> <li>• Oxidizing solids (Categories 1, 2, and 3)</li> </ul>

Pictogram	Hazard classes and categories
	<p>The <b>gas cylinder</b> pictogram is used for the following classes and categories:</p> <ul style="list-style-type: none"> <li>• Gases under pressure (Compressed gas, Liquefied gas, Refrigerated liquefied gas, and Dissolved gas)</li> </ul>
	<p>The <b>corrosion</b> pictogram is used for the following classes and categories:</p> <ul style="list-style-type: none"> <li>• Corrosive to metals (Category 1)</li> <li>• Skin corrosion/irritation— Skin corrosion (Categories 1, 1A, 1B, and 1C)</li> <li>• Serious eye damage/eye irritation— Serious eye damage (Category 1)</li> </ul>
	<p>The <b>exploding bomb</b> pictogram is used for the following classes and categories:</p> <ul style="list-style-type: none"> <li>• Self-reactive substances and mixtures (Types A and B*)</li> <li>• Organic peroxides (Types A and B*)</li> </ul>
	<p>The <b>skull and crossbones</b> pictogram is used for the following classes and categories:</p> <ul style="list-style-type: none"> <li>• Acute toxicity: <ul style="list-style-type: none"> <li>– Oral (Categories 1, 2, and 3)</li> <li>– Dermal (Categories 1, 2, and 3)</li> <li>– Inhalation (Categories 1, 2, and 3)</li> </ul> </li> </ul>
	<p>The <b>health hazard</b> pictogram is used for the following classes and categories:</p> <ul style="list-style-type: none"> <li>• Respiratory or skin sensitization— Respiratory sensitizer (Categories 1, 1A, and 1B)</li> <li>• Germ cell mutagenicity (Categories 1, 1A, 1B, and 2)</li> <li>• Carcinogenicity (Categories 1, 1A, 1B, and 2)</li> <li>• Reproductive toxicity (Categories 1, 1A, 1B, and 2)</li> <li>• Specific target organ toxicity— Single exposure (Categories 1 and 2)</li> <li>• Specific target organ toxicity— Repeated exposure (Categories 1 and 2)</li> <li>• Aspiration hazard (Category 1)</li> </ul>

## Note

The “Physical hazards not otherwise classified” and “Health hazards not otherwise classified” classes are required to have a GHS pictogram that is appropriate to the hazard identified.

Pictogram	Hazard classes and categories
	<p>The <b>exclamation mark</b> pictogram is used for the following classes and categories:</p> <ul style="list-style-type: none"><li>• Acute toxicity — Oral, Dermal, Inhalation (Category 4)</li><li>• Skin corrosion/irritation — Skin irritation (Category 2)</li><li>• Serious eye damage/eye irritation — Eye irritation (Categories 2 and 2A)</li><li>• Respiratory or skin sensitization — Skin sensitizer (Categories 1, 1A, and 1B)</li><li>• Specific target organ toxicity — Single exposure (Category 3)</li></ul>
	<p>The <b>biohazardous infectious materials</b> pictogram is used for the following classes and categories:</p> <ul style="list-style-type: none"><li>• Biohazardous infectious materials (Category 1)</li></ul>

\* Both the flame and exploding bomb pictograms are used for “Self-reactive substances and mixtures” (Type B) and “Organic peroxides” (Type B).

# Hazard classes and categories without pictograms

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Some hazardous products meet the criteria for hazard classes or categories but do not require pictograms. The product label and section 2 (Hazard identification) of the SDS still require the signal word, hazard statement(s), and other required label elements.

WHMIS 2015 hazard classes and categories that do not require a pictogram are:

- Flammable gases — Category 2
- Flammable liquids — Category 4
- Self-reactive substances and mixtures — Type G
- Organic peroxides — Type G
- Combustible dusts — Category 1
- Simple asphyxiants — Category 1
- Serious eye damage/eye irritation — Eye irritation — Category 2B
- Reproductive toxicity — Effects on or via lactation

# Where to find pictograms

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Pictograms will be on the supplier labels of the hazardous products you work with. They will also be on the SDSs (as the symbol or words that describe the symbol). For more information on labels, see Chapter 4 (starting on page 32). For more information on SDSs, see Chapter 5 (starting on page 48).



# 4 Labels

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# Labelling hazardous products

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Under WHMIS 2015, hazardous products used, handled, or stored in the workplace must be labelled. Labels are the first alert to users about the major hazards of these products. They also outline the basic precautions or safety steps that should be taken.

In most cases, suppliers are responsible for labelling the hazardous products that they provide to customers. Employers are responsible for:

- Making sure that hazardous products that come into the workplace are labelled
- Preparing and applying workplace labels when appropriate



# Overview of label types

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There are two main types of WHMIS labels: supplier labels and workplace labels.

A **supplier label** is provided for each hazardous product by the supplier. Supplier labels will appear on all hazardous products received at a workplace in Canada. If a hazardous product is always used in its original container with a supplier label, no other label is required.

A **workplace label** is required when any of the following apply:

- A hazardous product is produced (made) at the workplace and used in that workplace
- A hazardous product is decanted (for example, transferred or poured) into another container
- A supplier label becomes lost or illegible (unreadable)

In general, employers are responsible for providing workplace labels. Employers must also ensure that all labels at their workplace are legible and that they are replaced if damaged.

Workers must be educated to recognize and understand the information provided on supplier labels, workplace labels, and other means of identification (such as warning signs, colour codes, and placards). Employers are responsible for developing this education and training in consultation with worker representatives or the occupational health and safety committee.

# Supplier labels

## What's new

- New requirements for supplier labels: pictograms, signal words, and standardized hazard statements and precautionary statements.
- Most hazard classes and categories have a prescribed pictogram, signal word, and hazard statement.

## When supplemental label information is required

Supplemental label information is only included on a supplier label when:

- A toxic mixture has an ingredient with unknown acute toxicity, or
- A product reacts with water to produce an acutely toxic gas

Supplier labels continue to be required in English and French. They may be bilingual (as one label), or available as two labels (one in English, and one in French).

## Information required

A supplier label must include the following information:

- (1) **Product identifier** — the brand name, chemical name, common name, generic name, or trade name of the hazardous product.
- (2) **Initial supplier identifier** — the name, address, and telephone number of either the Canadian manufacturer or the Canadian importer.\*
- (3) **Pictogram(s)** — hazard symbol within a red, diamond-shaped border.
- (4) **Signal word** — a word used to alert the reader to a potential hazard and to indicate the severity of the hazard.
- (5) **Hazard statement(s)** — standardized phrases that describe the nature of the hazard posed by a hazardous product.
- (6) **Precautionary statement(s)** — standardized phrases that describe measures to be taken to minimize or prevent adverse effects resulting from:
  - Exposure to a hazardous product, or
  - Improper handling or storage of a hazardous product

In rare cases, supplier labels may also include **supplemental label information** that gives more details about precautionary actions, hazards not yet included in GHS, physical state, or route of exposure. This information must not contradict or detract from the standardized information.

- \* Initial supplier identifier — There are two exceptions to this requirement:
- In a situation where a hazardous product is being sold by a distributor, the distributor may replace the name, address, and telephone number of the initial supplier with their own contact information.
  - In a situation where an importer imports a hazardous product for use in their own workplace in Canada (i.e., the importer is not selling the hazardous product), the importer may retain the name, address, and telephone number of the foreign supplier on the label and SDS instead of substituting their own contact information.

## Format


There is no set format for a supplier label, but the pictogram(s), signal word, and hazard statement(s) must be grouped together.

A supplier label must be:

- Clearly and prominently displayed on the container
- Easy to read (i.e., you can see it easily without using any item except corrective glasses)
- In contrast with other information on the product or container
- Bilingual (as one label or two)

An example of a bilingual label is shown below.

### Sample supplier label

	<b>Product W-1 / Produit W-1</b>	Product identifier
Pictograms		
Signal word	<b>Danger</b>	<b>Danger</b>
Hazard statements	Fatal if swallowed. Causes skin irritation.	Mortel en cas d'ingestion. Provoque une irritation cutanée.
Precautionary statements	<b>Precautions:</b> Wear protective gloves. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product.  Store locked up. Dispose of contents/containers in accordance with local regulations.  IF ON SKIN: Wash with plenty of water. If skin irritation occurs: Get medical advice or attention. Take off contaminated clothing and wash it before reuse. IF SWALLOWED: Immediately call a POISON CENTRE or doctor. Rinse mouth.	<b>Conseils :</b> Porter des gants de protection. Se laver les mains soigneusement après manipulation. Ne pas manger, boire ou fumer en manipulant ce produit.  Garder sous clef. Éliminer le contenu/récipient conformément aux règlements locaux en vigueur.  EN CAS DE CONTACT AVEC LA PEAU : Laver abondamment à l'eau. En cas d'irritation cutanée : Demander un avis médical/consulter un médecin. Enlever les vêtements contaminés et les laver avant réutilisation. EN CAS D'INGESTION : Appeler immédiatement un CENTRE ANTIPOISON ou un médecin. Rincer la bouche.
Initial supplier identifier	ABC Chemical Co., 123 rue Anywhere St., Mytown, ON NON ONO (123) 456-7890	

## About signal words

A signal word is a prompt that alerts you about the degree or level of hazard of the product. There are only two signal words used: **Danger** or **Warning**. “Danger” is used for high-risk hazards, while “Warning” is used for less-severe hazards. If a signal word is assigned to a hazard class and category, it must be shown on the label and listed in section 2 (Hazard identification) of the safety data sheet (SDS).

Some hazard classes or categories do not have a signal word assigned to them.

### For more information

For a list of all hazard classes and categories and the hazard statements assigned to them, refer to Annex 1 (Classification and Labelling Summary Tables) of the United Nations publication *Globally Harmonized System of Classification and Labelling of Chemicals (GHS): Fifth revised edition*.  
[unece.org/fileadmin/DAM/trans/danger/publi/ghs/ghs\\_rev05/English/05e\\_annex1.pdf](http://unece.org/fileadmin/DAM/trans/danger/publi/ghs/ghs_rev05/English/05e_annex1.pdf)

## About hazard statements

Each hazard class and category has an assigned “hazard statement.” Hazard statements are brief, standardized sentences that tell you more about the exact hazard of the product. The statements are short, but they describe the most significant hazards of the product.

Examples of hazard statements are:

- Extremely flammable gas.
- Contains gas under pressure; may explode if heated.
- Fatal if inhaled.
- Causes eye irritation.
- May cause cancer.

The wording of the hazard statement helps to describe the degree of the hazard. For example, “May cause cancer” is more hazardous than “Suspected of causing cancer.”

## About precautionary statements

Precautionary statements provide advice on how to minimize or prevent adverse effects resulting from exposure to a hazardous product or resulting from improper storage or handling of a hazardous product. These statements can include instructions about storage, handling, first aid, personal protective equipment, and emergency measures. Like the hazard statements, the wording of precautionary statements is standardized.

There are four types of precautionary statements:

- Prevention
- Response (including first aid)
- Storage
- Disposal

Examples of precautionary statements are:

- Keep container tightly closed.
- Wear protective gloves/protective clothing/eye protection/face protection.
- If exposed or concerned: Get medical advice/attention.
- Fight fire remotely due to the risk of explosion.
- Protect from sunlight.

Precautionary statements will be consistent with the degree of the hazard associated with the product.

### About slashes and dots on supplier labels

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Slashes (/) and dots (...) are intended as instructions to the supplier to help them prepare the label and SDS.

For example, the guidance material from GHS lists the following precautionary statement: “Wear protective gloves/protective clothing/eye protection/face protection.”

The slash (/) means the supplier is to specify the appropriate type of equipment based on their knowledge of the product and how it is used. So, for example, this statement could appear as:

- Wear protective gloves and eye protection.  
or
- Wear protective gloves.  
or
- Wear protective gloves, protective clothing, eye protection, and face protection.

“Do not subject to grinding/shock/friction/...” is another example. In this case, the supplier is to specify the applicable rough handling circumstance to avoid (grinding, shock, and/or friction), and the dots (...) mean they are to consider other types of rough handling that should be mentioned.

## Updating supplier labels

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Labels need to be updated when the supplier becomes aware of any “significant new data.” Section 5.12 (1) of the Hazardous Products Regulations defines significant new data as:

“...new data regarding the hazard presented by a hazardous product that change its classification in a category or subcategory of a hazard class, or result in its classification in another hazard class, or change the ways to protect against the hazard presented by the hazardous product.”

Labels need to be updated within 180 days of the supplier being aware of the new information. If an employer purchases a product within this 180-day time period, the supplier must inform the employer of the changes, and the date they became available, in writing.

Employers need to update the existing labels or the information on the containers as soon as the supplier provides the significant new information.

## Sample supplier labels: WHMIS 1988 vs. WHMIS 2015

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Two sample supplier labels are shown on the next page for comparison purposes: WHMIS 1988 (top) and WHMIS 2015 (bottom).

## Comparing supplier labels

**WHMIS 1988**

**ACETONE ACÉTONE**

SEE MATERIAL SAFETY DATA SHEET FOR THIS PRODUCT  
VOIR LA FICHE SIGNALÉTIQUE POUR CE PRODUIT

<p><b>DANGER! EXTREMELY FLAMMABLE. IRRITATES EYES.</b></p> <p><b>PRECAUTIONS:</b> Keep away from heat, sparks, and flames. Ground containers when pouring. Avoid breathing vapours or mists. Avoid eye contact. Avoid prolonged or repeated contact with skin. Wear splash-proof safety goggles or faceshield and butyl rubber gloves. If acetone is present in concentrations greater than 250 ppm, wear a NIOSH-approved respirator with an organic vapour cartridge. Use with adequate ventilation, especially in enclosed areas. Store in a cool, well-ventilated area, away from incompatibles.</p> <p><b>FIRST AID:</b> In case of contact with eyes, immediately flush eyes with lots of running water for 15 minutes, lifting the upper and lower eyelids occasionally. Get medical attention immediately. In case of contact with skin, immediately wash skin with lots of soap and water. Remove contaminated clothing and shoes. Get medical attention if irritation persists after washing. Wash clothing before reuse. If inhaled, remove subject to fresh air. Give artificial respiration if not breathing. Get medical attention immediately. If swallowed, contact the Poison Control Centre. Get medical attention immediately. Do not give anything by mouth to an unconscious or convulsing person.</p> <p><b>ATTENTION! THIS CONTAINER IS HAZARDOUS WHEN EMPTY. ALL LABELLED HAZARD PRECAUTIONS MUST BE OBSERVED.</b></p>	<p><b>DANGER! EXTRÊMEMENT INFLAMMABLE. IRRITE LES YEUX.</b></p> <p><b>MESURES DE PRÉVENTION:</b> Tenir à l'écart de la chaleur, des étincelles et des flammes. Replier les récipients à la terre lors du transvasement. Éviter de respirer les vapeurs ou les brumes. Éviter le contact avec les yeux. Éviter le contact prolongé ou répété avec la peau. Porter des lunettes contre les éclaboussures de produit chimique ou une visière de protection, et des gants en caoutchouc butyle. Si l'acétone est présent en concentration de plus de 250 pour un million, porter un respirateur muni d'une cartouche à vapeur organique approuvé par NIOSH. Utiliser avec suffisamment de ventilation surtout dans les endroits clos. Entreposer dans un endroit frais, bien aéré, à l'écart des produits incompatibles.</p> <p><b>PREMIERS SOINS:</b> En cas de contact avec les yeux, rincer immédiatement et copieusement avec de l'eau courante pendant 15 minutes en soulevant les paupières inférieures et supérieures de temps en temps. Obtenir des soins médicaux immédiatement. En cas de contact avec la peau, laver immédiatement la région affectée avec beaucoup d'eau et de savon. Retirer les vêtements et les chaussures contaminés. Si l'irritation persiste après le lavage, obtenir des soins médicaux. Laver les vêtements avant de les réutiliser. En cas d'inhalation, transporter la victime à l'air frais. En cas d'arrêt respiratoire, pratiquer la respiration artificielle. Obtenir des soins médicaux immédiatement. En cas d'ingestion, contacter le Centre de Contrôle des Empoisonnements. Obtenir des soins médicaux immédiatement. Ne rien faire avaler à une victime inconsciente ou en convulsions.</p> <p><b>ATTENTION! CE RÉCIPIENT EST DANGEREUX LORSQU'IL EST VIDE. CHAQUE INDICATION DE DANGER SUR LES ÉTIQUETTES DOIVENT ÊTRE OBSERVÉES.</b></p>
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BIG Chemical Company / 123 Nitro Avenue, Vapour Town, BC 123-4567

**WHMIS 2015**

**ACETONE / ACÉTONE**

<p><b>Danger</b></p> <p><b>Highly flammable liquid and vapour. Causes serious eye irritation. May cause drowsiness or dizziness.</b></p> <p><b>Precautions:</b> Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed and store in a well-ventilated place. Keep cool. Take action to prevent static discharges. Ground and bond container and receiving equipment. Use only outdoors or in a well-ventilated area. Wear eye protection, face protection, protective clothing, and protective gloves. Avoid breathing mist, spray, vapours. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.</p>	<p><b>Danger</b></p> <p><b>Liquide et vapeurs très inflammables. Provoque une sévère irritation des yeux. Peut provoquer somnolence ou des vertiges.</b></p> <p><b>Conseils:</b> Tenir loin de la chaleur, des surfaces chaudes, des étincelles, des flammes nues et d'autres sources d'inflammation. Défense de fumer. Maintenir le récipient fermé de manière étanche. Stocker dans un endroit bien ventilé. Tenir au frais. Prendre des mesures contre les décharges électrostatiques. Mise à la terre et liaison équipotentielle du récipient et du matériel de réception. Utiliser seulement en plein air ou dans un endroit bien ventilé. Porter des gants de protection et des vêtements de protection. Porter un équipement de protection des yeux et du visage. Éviter de respirer les brouillards, les aérosols, ou les vapeurs. EN CAS D'INHALATION: Transporter la victime à l'extérieur et la maintenir au repos dans une position où elle peut confortablement respirer. EN CAS DE CONTACT AVEC LES YEUX: Rincer avec précaution à l'eau pendant plusieurs minutes. Enlever les lentilles de contact si la victime en porte et si elles peuvent être facilement enlevées. Continuer à rincer. EN CAS DE CONTACT AVEC LA PEAU (ou les cheveux): Retirer immédiatement tous les vêtements contaminés. Rincer la peau avec de l'eau ou doucher.</p>
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Rappter Chemicals Ltd., 1234 Jurassic Court, Moose Jaw, SK, S6H 3J8, (123)456-7890

## Supplier label requirements for shipments

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When a supplier ships a product, it will generally be transported in a single container, in a multi-container, or in bulk. If the product is in a **single container**, the supplier must apply the supplier label. If a number of inner containers are packaged into a **multi-container shipment** (such as a box or wrapped pallet), the supplier must, in most cases, apply labels on both the inner and outer containers. For **bulk shipments** without packaging, the supplier is exempt from the labelling requirements of the Hazardous Products Regulations (i.e., supplier labels are not required).

The *Transportation of Dangerous Goods Act* may require additional labels during transport. For multi-container shipments, a supplier label is not required on the outer container if a Transportation of Dangerous Goods label is present. Only the inner containers require supplier labels.

Employers are responsible for checking that supplier labels have been applied to the hazardous products received at their workplaces. If the supplier sends labelling information instead of labels, the employer must develop and apply, at a minimum, a workplace label.

If a supplier label is missing when the product is received, or if the employer believes the label contains inaccurate information, the employer must temporarily store that product while he or she is actively seeking the information from the supplier or the manufacturer. The temporarily stored product cannot be handled or used until a proper label has been obtained.

If a supplier label becomes illegible or is accidentally removed, the employer must replace the label with either a supplier label or a workplace label.



# Workplace labels

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A workplace label provides the following required information:

- A product identifier identical to the one found on the hazardous product's safety data sheet
- Safe handling information for the hazardous product
- A reference to the availability of an SDS (if applicable)

Workplace labels may include pictograms or other supplier label information.

## Format

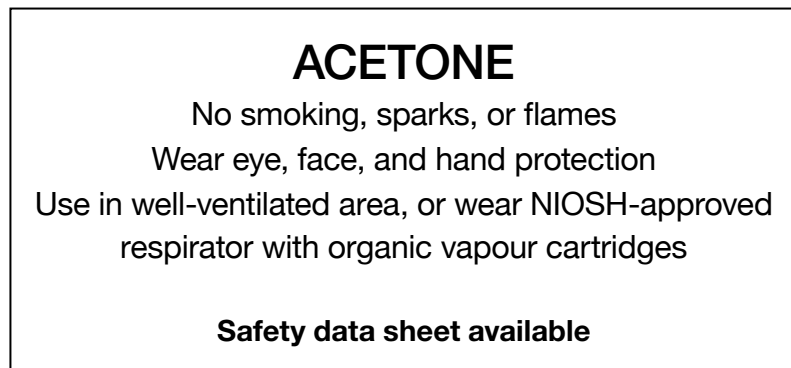
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The format for workplace labels is fairly flexible. For example:

- The information can be written directly onto the container using a permanent marker.
- The wording and language(s) used can be chosen to fit the specific workplace.

### Sample workplace label

An example of a workplace label is shown below:



## When workplace labels are required

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As mentioned earlier, a **workplace label** is required when any of the following apply:

- A hazardous product is produced (made) at the workplace and used in that workplace
- A hazardous product is decanted (for example, transferred or poured) into another container
- A supplier label becomes lost or illegible (unreadable)

In general, employers are responsible for providing workplace labels. Employers must also ensure that all labels at their workplace are legible and that they are replaced if damaged.

### Exceptions for decanted products

Workplace labels are not needed in two specific cases.

The first case is when a hazardous product is decanted from a container that has a supplier or workplace label on it into another container and:

- The decanted product stays under the control of the person who decanted it, and
- The decanted product's name (product identifier) is marked on the container, and
- All of the decanted product will be used during that same shift

For example, if a worker pours a hazardous product into a container (such as a jar, bottle, or bucket), writes the product's name on the container, will be the only person who will use the decanted product, and will use all of it during that same shift, then the worker doesn't need to apply a workplace label.

The second case is when a worker uses the decanted product immediately **and** completely. In this situation, the worker doesn't need to apply a workplace label or write the product's name on the container.

Note that an employer may have specific rules about labelling that go beyond what's required under WHMIS.

Workplace label requirements fall under provincial or territorial jurisdiction, or under the *Canada Labour Code* in federally regulated workplaces.

## When employers produce hazardous products

If an employer *produces* a hazardous product at a workplace, the employer must ensure that a workplace label is applied to the hazardous product or its container. (Note: "Produces" does not include the escape of a hazardous product from equipment or from another product.) However, a workplace label is not required if the hazardous product is in a container that is intended to contain the hazardous product for sale or distribution and the container is or is about to be appropriately labelled.

## Updating workplace labels

An employer must update a workplace label for a hazardous product as soon as significant new data about the product is available to the employer.

# Other permitted identification or labelling systems

In specific cases, a WHMIS label can also be a mark, sign, stamp, sticker, seal, ticket, tag, or wrapper. It can be attached, imprinted, stencilled, or embossed on the hazardous product or its container. Workers must be trained to be able to identify these alternate systems if they are used in the workplace.

Variations on supplier and workplace labels apply for specific items such as:

- **Bulk shipments** — A labelling exemption exists for products sold without packaging.
- **Small capacity containers 100 mL or less** — Exempt only from the requirement to have precautionary or hazard statements on the label.
- **Small capacity containers 3 mL or less** — Where the label will interfere with normal use of the product, the product would be



Hazardous products in pipes identified by colours and letters

required to have a label that is durable and legible for transport and storage, but removable during use.

- **Piping systems and vessels** — When hazardous products are contained or transferred in a piping system, a process or reaction vessel, or a tank car, tank truck, ore car, conveyor belt, or similar conveyance, the use of labels, placards, colour coding, or any other mode of identification is allowed (along with worker training).

## Labelling laboratory samples

The Hazardous Products Regulations define a laboratory sample as a hazardous product packaged in a container that holds less than 10 kg of the product and is intended only to be tested in a laboratory. This definition excludes samples that will be used for testing other products or for educational or demonstration purposes.

Many laboratory samples are sent or received in small capacity containers of 100 mL or less. For this size of laboratory sample, the container's label does not have to include precautionary or hazard statements. However, the label must show the product identifier, pictogram(s), signal word, and supplier identifier. If the container size is 3 mL or less and the label would interfere with normal use, the label may be removed while working with the hazardous product.

Laboratory samples of biohazardous infectious materials have been given special exceptions for labels. Modified supplier labels are permitted. When a sample classified as "Biohazardous infectious materials (Category 1)" is sent to a laboratory, the attached label must show the following:

- The name of any hazardous chemical in the sample
- The name of the biohazardous infectious material (if known)
- The following statement:  
"Hazardous Laboratory Sample. For hazard information or in an emergency, call / Échantillon pour laboratoire de produit dangereux. Pour obtenir des renseignements sur les dangers ou en cas d'urgence, composez"

This statement must be followed by an emergency telephone number.

In addition, labelling exceptions exist for laboratory samples of biohazardous infectious materials that are:

- Transferred to different containers than the ones received by the laboratory
- Collected or produced in the workplace

The exceptions allow for these hazardous products to be clearly identified through a combination of:

- A labelling system (for example, identifier labels, bar codes, or colour banding), and
- Worker education and training

For more information about exemptions for labelling laboratory samples and other containers, see Part 5 of the Hazardous Products Regulations.

# What workers should do when using a hazardous product

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As a worker, you should do the following:

- Always check to see if there is a label on the product before you use it.
- Read, understand, and follow the instructions on the label and SDS. And follow any education, instructions, and training your employer provides.
- Ask your supervisor if you are not sure about how to use or store the product.
- Ask for a new label when you can't see or read the old one properly.
- Don't use a product that is not labelled or if the label is unreadable. Ask your supervisor for help (for example, to replace the label).



# 5 Safety data sheets

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# About safety data sheets

## What's new

- MSDS replaced by SDS.
- Standard 16-section format.
- New information requirements (for example, inclusion of the WHMIS classification, hazard statements, and other label elements in Section 2).
- SDSs must be accurate at the time of sale or import, for each sale or import.
- SDSs to be updated when significant new information becomes available.

Safety data sheets (SDSs) are documents that provide information about hazardous products and advice about safety precautions.

An SDS tells you what the hazards of a product are, how to use the product safely, what to expect if the recommendations are not followed, how to recognize symptoms of exposure, and what to do if emergencies occur.

SDSs provide more-detailed hazard information about products than labels do. SDSs are important resources that help you learn more about the products you use. Use this information to identify:

- The hazards of the products you use
- How to protect yourself from those hazards
- Safe handling and emergency measures

SDSs are usually prepared or obtained by the manufacturer or importer of a product. In some circumstances, an employer may be required to prepare an SDS (for example, when the product is produced and used exclusively in that workplace).

Every product that is classified as a hazardous product under WHMIS that is intended for use, handling, or storage in a workplace in Canada must have an SDS.

## Format and information required

WHMIS 2015 requires a standard 16-section SDS. All information on the SDS must appear in the specified order.

The following table gives an overview of the information to be provided in each section. (A full list of the required information appears on page 79.)



**Table 7. Overview of information requirements for each section of an SDS**

SDS section and heading	Information requirements (partial list)
1 Identification	Product identifier, recommended use and restrictions on use, supplier contact information, emergency phone number.
2 Hazard identification	Classification (hazard class and category), label elements (including pictogram, signal word, hazard statements, and precautionary statements), and other hazards (e.g., thermal hazards).
3 Composition/ Information on ingredients	<p>For a hazardous product that is a substance: the chemical name, synonyms, Chemical Abstracts Service Number (CAS No.), and the chemical name of impurities, stabilizing solvents, and stabilizing additives where classified and that contribute to the classification of the product.</p> <p>For a hazardous product that is a mixture: for ingredients that present a health hazard, the chemical name, synonyms, CAS No., and concentration.</p> <p>Note: Confidential business information rules may apply (see page 67 for more information).</p>
4 First-aid measures	First-aid measures by route of exposure (inhalation, skin contact, etc.) as well as most important symptoms/effects.
5 Fire-fighting measures	Suitable (and unsuitable) extinguishing media, specific hazards, special equipment and precautions for firefighters.
6 Accidental release measures	Protective equipment, emergency procedures, methods and materials for containment and cleanup.
7 Handling and storage	Precautions for safe handling, conditions for storage, including any incompatibilities.
8 Exposure controls/ Personal protection	Exposure limits, engineering controls, personal protective equipment.
9 Physical and chemical properties	Appearance, odour, odour threshold, pH, melting/freezing point, boiling point and range, flash point, upper and lower flammable or explosive limits.
10 Stability and reactivity	Reactivity, chemical stability, possible hazardous reactions, conditions to avoid, incompatible materials, hazardous decomposition products.

SDS section and heading	Information requirements (partial list)
11 Toxicological information	Description of various toxic effects by route of entry, including effects of acute or chronic exposure, carcinogenicity, reproductive effects, respiratory sensitization.
12 Ecological information*	Aquatic and terrestrial toxicity (if available), persistence and degradability, bioaccumulative potential, mobility in soil.
13 Disposal considerations*	Safe handling and methods of disposal, including contaminated packaging.
14 Transport information*	UN number and proper shipping name, hazard classes, packing group.
15 Regulatory information*	Safety, health, and environmental regulations specific to the product.
16 Other information	Other information, including date of the latest revision of the SDS.

\* Sections 12 to 15 require the headings to be present. The supplier has the option to not provide information in these sections.

### Why SDSs can be difficult to understand

SDSs are complex and technical. SDSs have many different audiences, including occupational hygienists and safety professionals, employers, supervisors, nurses, doctors, emergency responders, and workers.

To ensure that SDS users can quickly find the information they need, information directed toward these various users will be listed in specific sections. Having a set format will make it easier to find the information you need on every SDS.

However, workers may find some of the information on an SDS difficult to understand. Employers must be able to explain the content of the SDS to workers in order for them to work safely with or near hazardous products.

The following sample SDS shows information items for acetone.

		<h2>Acetone</h2> <h3>Safety Data Sheet</h3>	
Date of issue: November 12, 1998		Revision date: June 1, 2018	
		Supersedes: May 10, 2015	
		Version: 1.3	
<b>SECTION 1: Identification</b>			
Substance name	Acetone		
CAS No	67-64-1		
Product code	BC987458		
Formula	C <sub>3</sub> H <sub>6</sub> O		
Synonyms	2-propanone / beta-ketopropane / dimethyl formaldehyde / dimethyl ketone / dimethylketal / DMK (=dimethyl ketone) / keto propane / methyl ketone / pyroacetic acid / pyroacetic ether / pyroacetic spirit		
<b>1.1. Recommended uses</b>			
Use of the substance	: Solvent Cleansing product Chemical raw material		
<b>1.2. Supplier Contact Information</b>			
Rappter Chemicals Ltd. 1234 Jurassic Court Moose Jaw, SK T 123-456-7890 - F 987-654-3210			
<b>1.3. Emergency Telephone Number</b>			
Emergency number:	123-456-7890 ext 4357 : CHEMTREC: 1-800-424-9300 or 011-703-527-3887		
<b>SECTION 2: Hazard identification</b>			
<b>2.1. Classification</b>			
<b>WHMIS 2015 classification</b>			
Flammable Liquid 2; Eye Irritation 2A; Specific Target Organ Toxicity (STOT), Single Exposure (SE), Narcotic Effects 3			
<b>2.2. Label elements</b>			
<b>WHMIS 2015 labeling</b>			
Hazard pictograms (WHMIS 2015)	 		
	GHS02      GHS07		
Signal word (WHMIS 2015)	: Danger		
Hazard statements (WHMIS 2015)	: H225 - Highly flammable liquid and vapour H319 - Causes serious eye irritation H336 - May cause drowsiness or dizziness		
Precautionary statements (WHMIS 2015)	: P210 - Keep away from heat, hot surfaces, open flames, sparks, and other ignition sources. - No smoking P233 - Keep container tightly closed P240 - Ground and bond container and receiving equipment P241 - Use explosion-proof electrical, lighting, ventilating equipment P242 - Use only non-sparking tools P243 - Take action to prevent static discharges P261 - Avoid breathing mist, spray, vapours P264 - Wash exposed skin thoroughly after handling P271 - Use only outdoors or in a well-ventilated area P280 - Wear eye protection, face protection, protective clothing, protective gloves P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P312 - Call a POISON CENTER if you feel unwell P337+P313 - If eye irritation persists: Get medical attention P370+P378 - In case of fire: Use dry chemical powder, alcohol-resistant foam, carbon dioxide (CO <sub>2</sub> ) for extinction P403+P233 - Store in a well-ventilated place. Keep container tightly closed		
June 1, 2018	EN (English)	SDS ID: 98014	1/9



## Acetone Safety Data Sheet

P405 - Store locked up  
P501 - Dispose of container to comply with local, state and federal regulations P235 - Keep cool

### 2.3. Other hazards

Other hazards not contributing to the classification : None

### 2.4. Unknown acute toxicity (WHMIS 2015)

No data available

## SECTION 3: Composition/Information on ingredients

### 3.1. Substances

Name	Product identifier	%	WHMIS 2015 classification
Acetone (Main constituent)	(CAS No) 67-64-1	100	Flam. Liq. 2, H225 Eye Irrit. 2A, H319 STOT SE 3, H336

Full text of H-phrases: see section 16

### 3.2. Mixture

Not applicable

## SECTION 4: First-aid measures

### 4.1. Description of first aid measures

First-aid measures general	: Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.
First-aid measures after inhalation	: Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.
First-aid measures after skin contact	: Wash immediately with lots of water. Soap may be used. Do not apply (chemical) neutralizing agents. Remove clothing before washing. Take victim to a doctor if irritation persists.
First-aid measures after eye contact	: Rinse immediately with plenty of water. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.
First-aid measures after ingestion	: Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not give milk/oil to drink. Do not induce vomiting. Give activated charcoal. Call Poison Information Centre ( <a href="http://www.big.be/antigif.htm">www.big.be/antigif.htm</a> ). Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital. Doctor: gastric lavage.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries	: Not expected to present a significant hazard under anticipated conditions of normal use.
Symptoms/injuries after inhalation	: EXPOSURE TO HIGH CONCENTRATIONS: Feeling of weakness. Irritation of the respiratory tract. Nausea. Vomiting. Headache. Central nervous system depression. Dizziness. Narcosis. Excited/restless. Drunkenness. Disturbed motor response. Respiratory difficulties. Disturbances of consciousness.
Symptoms/injuries after skin contact	: ON CONTINUOUS EXPOSURE/CONTACT: Dry skin. Cracking of the skin.
Symptoms/injuries after eye contact	: Irritation of the eye tissue.
Symptoms/injuries after ingestion	: Dry/sore throat. Risk of aspiration pneumonia. Symptoms similar to those listed under inhalation. AFTER ABSORPTION OF HIGH QUANTITIES: Irritation of the gastric/intestinal mucosa. Change in the haemogramme/blood composition. Change in urine output. Affection of the renal tissue. Enlargement/affection of the liver.
Symptoms/injuries upon intravenous administration	: Not available.
Chronic symptoms	: ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Red skin. Skin rash/inflammation. Dry/sore throat. Headache. Nausea. Feeling of weakness. Loss of weight. Possible inflammation of the respiratory tract.

### 4.3. Indication of any immediate medical attention and special treatment needed

Obtain medical assistance.

## SECTION 5: Fire-fighting measures

### 5.1. Extinguishing media

Suitable extinguishing media	: Preferably: alcohol resistant foam. Water spray. Polyvalent foam. BC powder. Carbon dioxide.
Unsuitable extinguishing media	: Solid water jet ineffective as extinguishing medium.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard	: DIRECT FIRE HAZARD. Highly flammable. Gas/vapour flammable with air within explosion limits. INDIRECT FIRE HAZARD. May be ignited by sparks. Gas/vapour spreads at floor level: ignition hazard. Reactions involving a fire hazard: see "Reactivity Hazard".
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## Acetone Safety Data Sheet

Explosion hazard	: DIRECT EXPLOSION HAZARD. Gas/vapour explosive with air within explosion limits. INDIRECT EXPLOSION HAZARD. Heat may cause pressure rise in tanks/drums: explosion risk. may be ignited by sparks. Reactions with explosion hazards: see "Reactivity Hazard".
Reactivity	: Upon combustion: CO and CO <sub>2</sub> are formed. Violent to explosive reaction with many compounds. Prolonged storage: on exposure to light: release of harmful gases/vapours. Reacts violently with (strong) oxidizers: peroxidation resulting in increased fire or explosion risk.

### 5.3. Advice for firefighters

Firefighting instructions	Cool tanks/drums with water spray/remove them into safety. Physical explosion risk: : extinguish/cool from behind cover. Do not move the load if exposed to heat. After cooling: persistent risk of physical explosion.
Protection during firefighting	: Heat/fire exposure: compressed air/oxygen apparatus.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

Protective equipment	: Gloves. Protective goggles. Protective clothing. Large spills/in enclosed spaces: compressed air apparatus.
Emergency procedures	: Keep upwind. Mark the danger area. Consider evacuation. Seal off low-lying areas. Close doors and windows of adjacent premises. Stop engines and no smoking. No naked flames or sparks. Spark- and explosionproof appliances and lighting equipment. Keep containers closed. Wash contaminated clothes.

#### 6.1.2. For emergency responders

Protective equipment	: Equip cleanup crew with proper protection.
Emergency procedures	: Ventilate area.

### 6.2. Environmental precautions

Prevent spreading in sewers.

### 6.3. Methods and material for containment and cleaning up

For containment	: Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Dam up the liquid spill. Try to reduce evaporation. Measure the concentration of the explosive gas-air mixture. Dilute/disperse combustible gas/vapour with water curtain. Provide equipment/receptacles with earthing. Do not use compressed air for pumping over spills.
Methods for cleaning up	: Take up liquid spill into inert absorbent material, e.g.: sand, earth, vermiculite. Scoop absorbed substance into closing containers. See "Material-handling" for suitable container materials. Spill must not return in its original container. Carefully collect the spill/leftovers. Damaged/cooled tanks must be emptied. Do not use compressed air for pumping over spills. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

### 6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling	: Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Handle uncleaned empty containers as full ones. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Do not use compressed air for pumping over. Use spark-/explosionproof appliances and lighting system. Take precautions against electrostatic charges. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Avoid prolonged and repeated contact with skin. Keep container tightly closed. Measure the concentration in the air regularly. Work under local exhaust/ventilation.
Hygiene measures	: Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

### 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	: Keep only in the original container in a cool, well ventilated place away from : Heat sources, Direct sunlight, incompatible materials. Keep container closed when not in use.
Incompatible products	: Strong bases. Strong acids.
Incompatible materials	: Sources of ignition. Direct sunlight.
Storage temperature	: 15 - 20 °C
Heat and ignition sources	: KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.
Prohibitions on mixed storage	: KEEP SUBSTANCE AWAY FROM: oxidizing agents. reducing agents. (strong) acids. (strong) bases. halogens. amines.



## Acetone Safety Data Sheet

- Storage area : Store in a cool area. Keep out of direct sunlight. Store in a dry area. Store in a dark area. Ventilation at floor level. Fireproof storeroom. Provide for an automatic sprinkler system. Provide for a tub to collect spills. Provide the tank with earthing. Meet the legal requirements.
- Special rules on packaging : SPECIAL REQUIREMENTS: closing, with pressure relief valve, clean, opaque, correctly labelled, meet the legal requirements. Secure fragile packagings in solid containers.
- Packaging materials : SUITABLE MATERIAL: steel, stainless steel, carbon steel, aluminium, iron, copper, nickel, bronze, glass. MATERIAL TO AVOID: synthetic material.

### 7.3. Specific end use(s)

No additional information available

## SECTION 8: Exposure controls/Personal protection

### 8.1. Control parameters

Acetone (67-64-1)		
BC OHS Regulation	TWA (ppm)	250 ppm
BC OHS Regulation	STEL/Ceiling (ppm)	500 ppm
ACGIH	TWA (ppm)	500 ppm
ACGIH	STEL (ppm)	750 ppm
OSHA	PEL (TWA) (mg/m <sup>3</sup> )	2400 mg/m <sup>3</sup>
OSHA	PEL (TWA) (ppm)	1000 ppm

### 8.2. Exposure controls

- Appropriate engineering controls : Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
- Materials for protective clothing : GIVES EXCELLENT RESISTANCE: No data available. GIVES GOOD RESISTANCE: butyl rubber, tetrafluoroethylene. GIVES LESS RESISTANCE: chlorosulfonated polyethylene, natural rubber, neoprene, polyurethane, PVA, styrene-butadiene rubber. GIVES POOR RESISTANCE: nitrile rubber, polyethylene, PVC, viton, nitrile rubber/PVC.
- Hand protection : Gloves (see information above).
- Eye protection : Protective goggles.
- Skin and body protection : Head/neck protection. Protective clothing.
- Respiratory protection : Wear half mask respirator with Organic Vapour cartridges as a minimum.
- Other information : Do not eat, drink or smoke during use.

## SECTION 9: Physical and Chemical Properties

### Information on basic physical and chemical properties

- Physical state : Liquid
- Appearance : Liquid.
- Molecular mass : 58.08 g/mol
- Colour : Colourless.
- Odour : Aromatic odour. Sweet odour. Fruity odour.
- Odour threshold : 306 - 653 ppm  
737 - 1574 mg/m<sup>3</sup>
- pH : 7
- Relative evaporation rate (butylacetate=1) : 6
- Relative evaporation rate (ether=1) : 2
- Melting point : -95 °C
- Freezing point : No data available
- Boiling point : 56 °C
- Flash point : -18 °C
- Critical temperature : 235 °C
- Self ignition temperature : 465 °C
- Decomposition temperature : No data available
- Flammability (solid, gas) : No data available
- Vapour pressure : 247 hPa
- Vapour pressure at 50 °C : 828 hPa
- Critical pressure : 47010 hPa
- Relative vapour density at 20 °C : 2.0
- Relative density : 0.79
- Relative density of saturated gas/air mixture : 1.2

June 1, 2018

EN (English)

SDS ID: 98014

4/9



## Acetone Safety Data Sheet

Density	: 786 kg/m <sup>3</sup>
Solubility	: Soluble in water. Soluble in ethanol. Soluble in ether. Soluble in dimethyl ether. Soluble in petroleum spirit. Soluble in chloroform. Soluble in dimethylformamide. Soluble in oils/fats. Water: Complete Ethanol: Complete Ether: Complete
Log Pow	: -0.24 (Test data)
Log Kow	: No data available
Viscosity, kinematic	: 0.417 mm <sup>2</sup> /s
Viscosity, dynamic	: 0.00033 Pa.s
Explosive properties	: No data available
Oxidizing properties	: None
Explosive limits	: 2 - 12.8 vol % 60 - 310 g/m <sup>3</sup>

### 9.1. Other information

Minimum ignition energy	: 1.15 mJ
Specific conductivity	: 500000 pS/m
Saturation concentration	: 589 g/m <sup>3</sup>
VOC content	: 100 %
Other properties	: Gas/vapour heavier than air at 20°C. Clear. Highly volatile. Substance has neutral reaction.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Upon combustion: CO and CO<sub>2</sub> are formed. Violent to explosive reaction with many compounds. Prolonged storage: on exposure to light: release of harmful gases/vapours. Reacts violently with (strong) oxidizers: peroxidation resulting in increased fire or explosion risk.

### 10.2. Chemical stability

Unstable on exposure to light.

### 10.3. Possibility of hazardous reactions

Not established.

### 10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

### 10.5. Incompatible materials

Strong acids. Strong bases.

### 10.6. Hazardous decomposition products

Carbon monoxide. Carbon dioxide.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Not classified

Acetone ( f )67-64-1	
LD50 oral rat	5800 mg/kg (Rat; Experimental value,Rat; Experimental value)
LD50 dermal rabbit	20000 mg/kg (Rabbit; Experimental value,Rabbit; Experimental value)
LC50 inhalation rat (mg/l)	71 mg/l/4h (76 mg/l/4h; Rat; Rat; Experimental value; Experimental value,76 mg/l/4h; Rat; Rat; Experimental value; Experimental value)
LC50 inhalation rat (ppm)	30000 ppm/4h (Rat; Experimental value,Rat; Experimental value)

Skin corrosion/irritation	: Not classified pH: 7
Serious eye damage/irritation	: Causes serious eye irritation. pH: 7
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified Based on available data, the classification criteria are not met
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified Based on available data, the classification criteria are not met
Specific target organ toxicity (single exposure)	: May cause drowsiness or dizziness.



## Acetone Safety Data Sheet

Specific target organ toxicity (repeated exposure)	: Not classified Based on available data, the classification criteria are not met
Aspiration hazard	: Not classified Based on available data, the classification criteria are not met
Potential Adverse human health effects and symptoms	: Based on available data, the classification criteria are not met.
Symptoms/injuries after inhalation	: EXPOSURE TO HIGH CONCENTRATIONS: Feeling of weakness. Irritation of the respiratory tract. Nausea. Vomiting. Headache. Central nervous system depression. Dizziness. Narcosis. Excited/restless. Drunkenness. Disturbed motor response. Respiratory difficulties. Disturbances of consciousness.
Symptoms/injuries after skin contact	: ON CONTINUOUS EXPOSURE/CONTACT: Dry skin. Cracking of the skin.
Symptoms/injuries after eye contact	: Irritation of the eye tissue.
Symptoms/injuries after ingestion	: Dry/sore throat. Risk of aspiration pneumonia. Symptoms similar to those listed under inhalation. AFTER ABSORPTION OF HIGH QUANTITIES: Irritation of the gastric/intestinal mucosa. Change in the haemogramme/blood composition. Change in urine output. Affection of the renal tissue. Enlargement/affection of the liver.
Symptoms/injuries upon intravenous administration	: Not available.
Chronic symptoms	: ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Red skin. Skin rash/inflammation. Dry/sore throat. Headache. Nausea. Feeling of weakness. Loss of weight. Possible inflammation of the respiratory tract.

### SECTION 12: Ecological information

#### 12.1. Toxicity

Ecology - general	Classification concerning the environment: not applicable.
Ecology - air	: TA-Luft Klasse 5.2.5.
Ecology - water	: Not harmful to fishes (LC50(96h) >1000 mg/l). Not harmful to invertebrates (Daphnia). Not harmful to algae (EC50 >1000 mg/l). Not harmful to plankton. Inhibition of activated sludge.

Acetone (67-64-1)	
LC50 fishes 1	6210 mg/l (96 h; Pimephales promelas; NOMINAL CONCENTRATION)
EC50 Daphnia 1	8800 mg/l (48 h; Daphnia pulex)
LC50 fish 2	5540 mg/l 96 h; Salmo gairdneri (Oncorhynchus mykiss)
TLM fish 1	13000 ppm (96 h; Gambusia affinis; TURBULENT WATER)
TLM fish 2	> 1000 ppm (96 h; Pisces)
Threshold limit other aquatic organisms 1	3000 mg/l (Plankton)
Threshold limit other aquatic organisms 2	28 mg/l (Protozoa)
Threshold limit algae 1	7500 mg/l (Scenedesmus quadricauda; PH = 7)
Threshold limit algae 2	3400 mg/l (48 h; Chlorella sp.)

#### 12.2. Persistence and degradability

Acetone (67-64-1)	
Persistence and degradability	Readily biodegradable in water. Biodegradable in the soil. Biodegradable in the soil under anaerobic conditions. No (test)data on mobility of the substance available.
Biochemical oxygen demand (BOD)	1.43 g O <sub>2</sub> /g substance
Chemical oxygen demand (COD)	1.92 g O <sub>2</sub> /g substance
ThOD	2.20 g O <sub>2</sub> /g substance

#### 12.3. Bioaccumulative potential

Acetone (67-64-1)	
BCF fish 1	0.69 (Pisces)
BCF other aquatic organisms 1	3
Log Pow	-0.24 (Test data)
Bioaccumulative potential	Not bioaccumulative.

#### 12.4. Mobility in soil

Acetone (67-64-1)	
Surface tension	0.0237 N/m

#### 12.5. Other adverse effects

Other information	: Avoid release to the environment.
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## Acetone Safety Data Sheet

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Waste disposal recommendations	Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle by distillation. Remove to an authorized waste incinerator for solvents with energy recovery. Do not discharge into drains or the environment.
Additional information	: LWCA (the Netherlands): KGA category 03. Hazardous waste according to Directive 2008/98/EC.
Ecology - waste materials	: Avoid release to the environment.

### SECTION 14: Transportation Information

#### 14.1. UN number

UN-No.(DOT)	1090
DOT NA no.	UN1090

#### 14.2. UN proper shipping name

DOT Proper Shipping Name	: Acetone
Department of Transportation (DOT) Hazard Classes	: 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120
Hazard labels (DOT)	: 3 - Flammable liquids



Packing group (DOT)	: II - Medium Danger
DOT Special Provisions (49 CFR 172.102)	: IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized. T4 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3) TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / (1 + a (tr - tf))$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.
DOT Packaging Exceptions (49 CFR 173.xxx)	: 150
DOT Packaging Non Bulk (49 CFR 173.xxx)	: 202
DOT Packaging Bulk (49 CFR 173.xxx)	: 242

#### 14.3. Additional information

Other information	: No supplementary information available.
State during transport (ADR-RID)	: as liquid.

#### Overland transport

Packing group (ADR)	: II
Class (ADR)	: 3 - Flammable liquids
Hazard identification number (Kemler No.)	: 33
Classification code (ADR)	: F1
Danger labels (ADR)	: 3 - Flammable liquids



Orange plates



Tunnel restriction code	: D/E
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## Acetone Safety Data Sheet

### Transport by sea

DOT Vessel Stowage Location : B - (i) The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.

EmS-No. (1) : F-E  
EmS-No. (2) : S-D

### Air transport

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 5 L  
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 60 L

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

Acetone (67-64-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	5000 lb

### EU-Regulations

No additional information available

### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flam. Liq. 2 H225 Eye Irrit. 2 H319 STOT SE 3 H336

Full text of H-phrases: see section 16

### Classification according to Directive 67/548/EEC or 1999/45/EC

F; R11 Xi; R36 R66 R67

Full text of R-phrases: see section 16

### 15.2. US State regulations

No additional information available

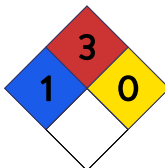
## SECTION 16: Other information

Other information : Information provided is current as of the latest revision date: June 1, 2018.

Full text of H-phrases:

Eye Irrit. 2A	Serious eye damage/eye irritation, Category 2A
Flam. Liq. 2	Flammable liquids, Category 2
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Narcosis
H225	Highly flammable liquid and vapour
H319	Causes serious eye irritation
H336	May cause drowsiness or dizziness

NFPA health hazard  
NFPA fire hazard  
NFPA reactivity



: 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.  
: 3 - Liquids and solids that can be ignited under almost all ambient conditions.  
: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



**Acetone**  
Safety Data Sheet

**HMIS III Rating**

Health : 1 Slight Hazard - Irritation or minor reversible injury possible  
Flammability : 3 Serious Hazard  
Physical : 0 Minimal Hazard  
Personal Protection : C

SDS US (GHS HazCom 2012)

*Information in this SDS is from available published sources and is believed to be accurate. No warranty, express or implied, is made and Rappter Chemicals LTD assumes no liability resulting from the use of this SDS. The user must determine suitability of this information for his application.*

## When workers should use SDSs

As a worker, you should keep the following points in mind.

Always be familiar with the hazards of a product **before** you start using it.

- Look at an SDS and match the name of the product on the container to the one on the SDS (Section 1).
- Know the hazards (Section 2).
- Understand safe handling and storage instructions (Section 7).
- Understand what to do in an emergency (sections 4, 5, and 6).

You can think of the SDS as having four main purposes. It provides information on:

- **Identification** — for the product and supplier
- **Hazards** — physical (fire and reactivity) and health
- **Prevention** — steps you can take to work safely and reduce or prevent exposure
- **Response** — appropriate responses in various emergency situations (for example, first aid, fire, or accidental release)

A few things to know:

- Make sure that the product is being used in the way the manufacturer intended. Otherwise, the advice provided on the SDS and label may not apply, or the protective measures listed may not be adequate. Section 1 of the SDS should describe the typical use of the product and may indicate restrictions. Ask your supervisor or a health and safety professional for advice if the way you use the product does not match the SDS.
- Section 2 will summarize the hazards related to the product, precautions to take, and what to do in an emergency. The SDS covers information about the potential hazards, but it may not be specific about the required safe work procedures needed for your workplace. (For example, the SDS may not specify what type of respirator must be used, just that a respirator is needed.) Ask your supervisor for more information. These decisions may require the help of a safety professional or someone with chemical safety knowledge.

## The meaning of “not available” or “not applicable” on an SDS

With the exception of sections 12 to 15, the supplier is required to provide information on each specific information element required on the SDS. In some cases, it may be appropriate for the supplier to

state “not available” or “not applicable” instead of providing the specific information.

- “Not available” means that the information could not be located or does not exist. For example, if the supplier cannot locate any studies that measure the odour threshold, which is reported in Section 9 of the SDS, the supplier would report “not available.”
- “Not applicable” means that the information element is not relevant. For example, if the product is odourless, then the odour threshold would be reported as “Not applicable.”

Note that the supplier should not use the abbreviation “n.a.” or “NA” without defining it, as it could mean “not applicable,” “not available,” or something entirely different.

### MSDS headings vs. SDS headings

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The following table compares the section headings of “old” sample MSDSs against the headings of SDSs. Note that there was no set format for MSDSs, but the SDS format is standardized.

**Table 8. MSDS headings vs. SDS headings**

9-section MSDS headings	16-section MSDS headings	16-section WHMIS 2015 SDS headings
1 Product information	1 Chemical product and company identification	1 Identification
2 Hazardous ingredients	2 Composition/Information on ingredients	2 Hazard identification
3 Physical data	3 Hazards identification	3 Composition/Information on ingredients
4 Fire and explosion data	4 First aid measures	4 First-aid measures
5 Reactivity data	5 Fire fighting measures	5 Fire-fighting measures
6 Toxicological properties	6 Accidental release measures	6 Accidental release measures
7 Preventive measures	7 Handling and storage	7 Handling and storage
8 First aid measures	8 Exposure control / Personal protection	8 Exposure controls/ Personal protection
9 Preparation information	9 Physical and chemical properties	9 Physical and chemical properties
	10 Stability and reactivity	10 Stability and reactivity
	11 Toxicological information	11 Toxicological information
	12 Ecological information	12 Ecological information*
	13 Disposal considerations	13 Disposal considerations*
	14 Transport information	14 Transport information*
	15 Regulatory information	15 Regulatory information*
	16 Other information	16 Other information

\* Sections 12 to 15 require the headings to be present, but under Canadian regulations, the supplier has the option to not provide information in these sections.

## Looking beyond an SDS for more information

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An SDS may not necessarily contain all the information you need. A lot of health hazard information, for example, is written in general terms. In addition, SDSs are often written for many different uses or applications of the product, and the handling and safety precautions may not be specific to your workplace.

Your health and safety committee or representative, health and safety specialist, occupational health nurse, family doctor, supervisor, employer, or supplier should be able to help you find more information if needed.

# Updating SDSs

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SDSs are required to be accurate at the time of sale or import. An SDS needs to be updated when the supplier becomes aware of any “significant new data.”

This means that an SDS must be updated when:

- There is new information that changes how the hazardous product is classified, or
- There are changes to the way you should handle or store the product, or to the way you should protect yourself from the hazards of the product

SDSs need to be updated within 90 days of the supplier being aware of the new information. If you purchase a product within this 90-day time period, the supplier must inform you of the significant new data and the date on which it became available in writing.

## How to find out if an SDS has been updated

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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 the one on any previous SDS you have.



# Responsibilities for SDSs

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## Suppliers

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Suppliers of hazardous products must do the following:

- Provide an accurate and complete SDS for each hazardous product they sell in Canada.
- Provide an SDS in both official languages (English and French).
- Obtain or prepare an SDS on or before importing a hazardous product.
- Ensure that information is not ambiguous and does not conflict with information on the supplier label or in other parts of the SDS. If abbreviations are used, they must be explained in the text.
- Update an SDS within 90 days of significant new data becoming available.

## Employers

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Employers will be required to make sure that all hazardous products (as defined by the Hazardous Products Regulations) have up-to-date SDSs when they enter the workplace. The SDSs must be readily available at all times to the workers who are exposed or near to the hazardous products, and to the health and safety committee or representative. (It's not acceptable for an SDS to be read to a worker over a telephone or radio.)

Employers may computerize the SDS information as long as:

- All employees have access to and are trained on how to use the computer or device.
- The computers/devices are kept in working order.
- The employer makes a hard copy of the SDS available to the employee or health and safety committee/representative upon request.

As mentioned earlier, in some circumstances an employer may be required to prepare an SDS (for example, when the product is produced and used in the workplace).

Employers who use hazardous products are also responsible for the following:

- Educating and training workers to ensure they understand the information on SDSs and are able to use the information to work safely with and near hazardous products.
- Ensuring that a hazardous product is not used, stored, or handled in a workplace unless all the applicable WHMIS requirements concerning labels, identifiers, SDSs, and worker education and training are complied with. If these requirements have not been met, the employer can temporarily store the hazardous product while actively working toward compliance.
- Ensuring that no SDS is more than three years old. Chemicals are constantly being studied, and new information can affect the health and safety information on an SDS. Even if the ingredients of a product have not changed, other important information may have changed.

#### **When an up-to-date SDS is unavailable**

When an SDS is three years old, an employer must obtain an up-to-date SDS from the supplier.

As an employer, you have the following options if an up-to-date SDS is unavailable:

- Get written confirmation from the supplier that the SDS hasn't changed, or that the most recent SDS doesn't apply to the hazardous product.
- Update the existing SDS by adding any significant new data or information about the hazardous product that you are aware of, based on the product's ingredients.

For more information, refer to section 5.14 of the Occupational Health and Safety Regulation.

# Confidential business information (“trade secrets”)

Confidential business information (CBI) refers to specific product information that suppliers or employers who are manufacturers are permitted to withhold from an SDS or label for a period of three years. In the United States, CBI may be called trade secrets or proprietary information. Under WHMIS, a supplier can make a request to Health Canada to protect certain information that gives a company an economic advantage over competitors. Crucial information such as health hazards may **never** be withheld.

Types of information that may be granted this exemption are:

- Chemical identity
- Concentration of ingredients
- Information that can be used to identify an ingredient, such as a toxicological study
- Information that can be used to identify the hazardous product
- Information that can be used to identify the supplier of the hazardous product

The acronym HMIRA stands for the federal *Hazardous Materials Information Review Act*.

If the term “trade secret” or “proprietary information” appears on an SDS, it must have an HMIRA registration number and date. The following are examples of statements you may see:

- While a CBI claim is being processed:  
*CBI under review. HMIRA Registration No.: 1938. Filing date: July 20, 2018.*
- After a CBI claim has been granted:  
*HMIRA Registration No.: 1938. Date granted: August 20, 2018.*

When information is needed for emergency or first aid treatment, a supplier or employer must immediately disclose — in confidence — to a treating physician or nurse, the specific chemical identity and other necessary information about a hazardous product protected by a trade secret claim. In addition, an officer of Health Canada may disclose — in confidence — withheld information to agencies responsible for occupational health and safety.

For more information on confidential business information and WHMIS, consult the *Hazardous Materials Information Review Act* and Regulations, or contact Health Canada. For links and contact information, see pages 92 and 93.



# 6 Education and training

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# About WHMIS education and training for workers

## In brief

- Employers must educate and train workers on the hazards and safe use, handling, and storage of hazardous products.
- Employers are required to educate and train workers about WHMIS 2015 (new pictograms, signal words, hazard classes, labels, SDSs, etc.).
- Workers must participate in WHMIS training programs, take necessary steps to protect themselves and their co-workers, and participate in identifying and controlling hazards.

Under WHMIS 2015, education and training can be thought of as two separate parts:

- **Education** refers to general information such as:
  - How WHMIS works
  - The major hazards of the hazardous products in use in the workplace
  - The rights and responsibilities of employers and workers
  - The content required on labels and SDSs, and the significance of this information
- **Training** refers to the site- and job-specific information to employees that will cover your workplace's procedures for storage, handling, use, disposal, emergencies, spills, and what to do in unusual situations.

## Who should receive education and training?

If a workplace uses hazardous products, a WHMIS program must be in place. Workers must be educated and trained so they understand the hazards and know how to work safely with hazardous products.

All workers who work with a hazardous product, or who may be exposed to a hazardous product as part of their work activities, must learn about the hazard information for these products. (For example, a receptionist at a dental office may be exposed to mercury if it is spilled.) The hazard information should include the information received from the supplier, as well as any other information that the employer is aware of about the use, storage, and handling of each product.

As an example, this education and training will include all workers who:

- May be exposed to a hazardous product due to their work activities (including normal use, maintenance activities, or emergencies)
- Use, store, handle, or dispose of a hazardous product
- Supervise or manage workers who may be exposed, or use, store, handle, or dispose of a hazardous product
- Are involved in emergency response

## Who should provide the education and training?

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WHMIS legislation places the obligation for education and training with the employer, and it outlines the minimum requirements for education and training. This education and training may be provided by the employer, or by a qualified person or agency chosen by the employer. Regardless of who delivers the education and training, employers remain legally responsible to ensure the protection of workers.

## Topics to be covered

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Examples of topics that should be covered during education and training include:

- The information on both supplier labels and workplace labels, and what that information means
- The information on the safety data sheet (SDS) and what that information means
- The procedures required for safe use, handling, and disposal of a hazardous product
- Any other information required when the product is in a pipe, piping system, vessel, tank car, etc.
- Procedures to follow if the hazardous product may be present in the air and a worker may be exposed
- All procedures that must be followed in an emergency that involves the hazardous product

# Duties for education and training

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## Employers

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Employers must develop, implement, and maintain a worker WHMIS education and training program. Education and training is required for workers who may be exposed to hazardous products that are produced or used at the workplace.

The employer has the general responsibility to provide workers with all of the hazard information possible, either from the supplier or based on information the employer is, or ought to be, aware of.

Employers are expected to consult with the health and safety committee (or representative) when developing, implementing, or reviewing the education and training programs.

In addition, employers must review their overall WHMIS education and training programs at least annually, or more often if there is a change in work conditions, hazard information, or similar factors. This review should be done in consultation with the health and safety committee or representative.

Refresher education and training is generally required:

- (1) As needed to protect workers' health and safety
- (2) If conditions of the workplace have changed
- (3) If new products are introduced
- (4) If the products have changed and now have different hazards
- (5) When new hazard information becomes available
- (6) If there is new information about safe use, handling, storage, or disposal

Employers must periodically evaluate workers' knowledge using written tests, practical demonstrations, and other suitable means.

## Workers

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Workers must participate in the education and training sessions. They must also follow the safe work procedures established by their employer.



Workers who are successfully educated and trained in WHMIS must be able to answer these four key questions for every hazardous product they work with:

- What are the hazards of the product?
- How do I protect myself from those hazards?
- What do I do in case of an emergency?
- Where can I get further information?

When the education and training program is reviewed, it is important for employers to find out if workers still understand the hazards of hazardous products and follow safe work procedures. These four key questions can also be used to evaluate whether workers need to be retrained because they have forgotten some information.

### Does WorkSafeBC validate education or training programs?

WorkSafeBC does not validate education or training programs. Private WHMIS consultants can help you with education or training. WorkSafeBC prevention officers will conduct performance-based audits as part of their workplace inspections. For example, they may evaluate workers' knowledge of health and safety information specific to the products they work with or near.

External companies that use high-pressure sales tactics have contacted some employers. Keep in mind that employers have a choice when deciding on an external education or training provider.

Some industries, such as construction, offer WHMIS “cards” or “certificates” to participants who complete their WHMIS education program. Such cards and certificates can be useful for workers who move regularly from site to site, enabling them to prove to new employers that they have attended WHMIS sessions. However, presentation of a card, for example, does not necessarily guarantee that a worker understands and can apply the information. Unless written evaluation has taken place, cards and certificates merely document attendance. **Job-specific training at each worksite is still required for all workers who work with or near hazardous products.**

# Implementing WHMIS 2015 in your workplace

## What is an exposure control plan?

An exposure control plan (ECP) is a requirement of WorkSafeBC's Occupational Health and Safety Regulation. An ECP sets out a detailed approach to protecting workers from harmful exposure to designated substances (for example, carcinogens, sensitizers, and reproductive toxins) and, under certain conditions, for all other hazardous products.

To implement the WHMIS program, employers should make use of supplier labels and SDSs, as well as their own knowledge of the hazards of products and their use in the workplace. Their workplace knowledge should take into account factors such as quantity, work processes, control measures, and work location. For example, the hazards of spray painting with a hazardous product inside a confined space are far different from the hazards of hand brushing the same product outdoors.

Based on all this information, employers must develop exposure control plans (when required) and written safe work procedures that ensure the health and safety of workers. They must also educate their workers about the hazards and train them in safe work procedures.

How employers implement WHMIS in their own workplaces will vary, but the major elements of their programs will be similar. The "WHMIS 2015 implementation plan checklist" on page 83 can be used to verify that a workplace WHMIS implementation plan meets WorkSafeBC guidelines. In developing a program to instruct workers, an employer might use the "WHMIS 2015 education and training checklist" on page 86.

## What are safe work procedures?

Employers must develop effective procedures to prevent exposing their workers to excessive levels of hazardous products. These include safe work procedures for handling, using, storing, and disposing of hazardous products. As well, safe work procedures must be established for emergency situations and spill cleanups.

Safe work procedures should be written, and they should address the specific hazards of the hazardous product and how it is used in the workplace. They must contain enough detail to provide direction to workers. Workers must be trained by the employer and must follow these procedures at the worksite.

## Sample safe work procedure

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The following is an example of a written safe work procedure to be used by authorized workers for cleanup of small spills of acetone (about one litre) for a particular worksite:

- (1) Extinguish and control all ignition sources, including electrical services, open flames, and electrostatic discharge.
- (2) Evacuate workers to the designated safe location.
- (3) Report the spill to your supervisor.
- (4) Get the waste containers and spill cart.
- (5) Put on the respirator, butyl rubber gloves, and safety goggles.
- (6) Clean up the acetone using chemical absorbent pillows from the spill cart according to the manufacturer's instructions.
- (7) Do not flush or rinse the spilled acetone into the sewer system.
- (8) Place used absorbent pillows (containing acetone) in designated waste containers.
- (9) Dispose of used chemical absorbent pillows according to local waste disposal procedures.



# 7 Tables and checklists

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# WHMIS 2015 information items on a supplier label

Information item	Description
1 Product identifier	The brand name, chemical name, common name, generic name, or trade name of the hazardous product.
2 Initial supplier identifier	The name, address, and telephone number of either the Canadian manufacturer or the Canadian importer.*
3 Pictogram(s)	Hazard symbol typically contained within a red, diamond-shaped border.
4 Signal word	A word used to alert the reader to a potential hazard and to indicate the severity of the hazard. “Danger” is used for high-risk hazards, while “Warning” is used for less severe hazards.
5 Hazard statement(s)	Standardized phrases that describe the nature of the hazard posed by a hazardous product. Examples include “Extremely flammable gas,” “Fatal if inhaled,” and “May cause cancer.”
6 Precautionary statement(s)	Standardized phrases that describe measures to be taken to minimize or prevent adverse effects resulting from: <ul style="list-style-type: none"><li>• Exposure to a hazardous product, or</li><li>• Improper handling or storage of a hazardous product</li></ul> Examples include “Keep container tightly closed,” “Wear eye protection,” and “If exposed or concerned: Get medical attention.”

In rare cases, labels may include supplemental label information about precautionary actions, hazards not yet included in GHS, physical state, or route of exposure. This information must not contradict or detract from the standardized information. Supplemental label information is only included on a supplier label when:

- A toxic mixture has an ingredient with unknown acute toxicity, or
- A product reacts with water to produce an acutely toxic gas

\* Initial supplier identifier — There are two exceptions to this requirement:

- In a situation where a hazardous product is being sold by a distributor, the distributor may replace the name, address, and telephone number of the initial supplier with their own contact information.
- In a situation where an importer imports a hazardous product for use in their own workplace in Canada (i.e., the importer is not selling the hazardous product), the importer may retain the name, address, and telephone number of the foreign supplier on the label and SDS instead of substituting their own contact information.

# Information items on an SDS (full list)

SDS section and heading	Specific information elements
1 Identification	<ul style="list-style-type: none"> <li>• Product identifier (e.g., product name)</li> <li>• Other means of identification (product family, synonyms, etc.)</li> <li>• Recommended use</li> <li>• Restrictions on use</li> <li>• Canadian supplier identifier<sup>+</sup> <ul style="list-style-type: none"> <li>– Name, full address, and phone number(s)</li> </ul> </li> <li>• Emergency telephone number and any restrictions on the use of that number, if applicable</li> </ul>
2 Hazard identification	<ul style="list-style-type: none"> <li>• Hazard classification (class, category) of substance or mixture, or a description of the identified hazard for Physical or Health Hazards Not Otherwise Classified</li> <li>• Label elements: <ul style="list-style-type: none"> <li>– Pictogram or the name of the pictogram (e.g., flame; skull and crossbones)</li> <li>– Signal word</li> <li>– Hazard statement(s)</li> <li>– Precautionary statement(s)</li> </ul> </li> <li>• Other hazards which do not result in classification (e.g., molten metal hazard)</li> </ul>
3 Composition/ Information on ingredients	<ul style="list-style-type: none"> <li>• When a hazardous product is a material or substance: <ul style="list-style-type: none"> <li>– Chemical name</li> <li>– Common name and synonyms</li> <li>– Chemical Abstracts Service (CAS) registry number and any unique identifiers</li> <li>– Chemical name of impurities, stabilizing solvents and/or additives*</li> </ul> </li> <li>• For each material or substance in a mixture that is classified in a health hazard class<sup>**</sup>: <ul style="list-style-type: none"> <li>– Chemical name</li> <li>– Common name and synonyms</li> <li>– CAS registry number and any unique identifiers</li> <li>– Concentration</li> </ul> </li> </ul> <p><b>NOTE:</b> Confidential business information rules can apply.</p>

SDS section and heading	Specific information elements
4 First-aid measures	<ul style="list-style-type: none"> <li>• First-aid measures by route of exposure:               <ul style="list-style-type: none"> <li>- Inhalation</li> <li>- Skin contact</li> <li>- Eye contact</li> <li>- Ingestion</li> </ul> </li> <li>• Most important symptoms and effects (acute or delayed)</li> <li>• Immediate medical attention and special treatment, if necessary</li> </ul>
5 Fire-fighting measures	<ul style="list-style-type: none"> <li>• Suitable extinguishing media</li> <li>• Unsuitable extinguishing media</li> <li>• Specific hazards arising from the hazardous product (e.g., hazardous combustion products)</li> <li>• Special protective equipment and precautions for firefighters</li> </ul>
6 Accidental release measures	<ul style="list-style-type: none"> <li>• Personal precautions, protective equipment, and emergency procedures</li> <li>• Methods and materials for containment and cleaning up</li> </ul>
7 Handling and storage	<ul style="list-style-type: none"> <li>• Precautions for safe handling</li> <li>• Conditions for safe storage (including incompatible materials)</li> </ul>
8 Exposure controls/ Personal protection	<ul style="list-style-type: none"> <li>• Control parameters, including occupational exposure guidelines or biological exposure limits and the source of those values</li> <li>• Appropriate engineering controls</li> <li>• Individual protection measures (e.g., personal protective equipment)</li> </ul>



SDS section and heading	Specific information elements
9 Physical and chemical properties	<ul style="list-style-type: none"> <li>• Appearance (physical state, colour, etc.)</li> <li>• Odour</li> <li>• Odour threshold</li> <li>• pH</li> <li>• Melting point / Freezing point</li> <li>• Initial boiling point / boiling range</li> <li>• Flash point</li> <li>• Evaporation rate</li> <li>• Flammability (solid; gas)</li> <li>• Lower flammable/explosive limit</li> <li>• Upper flammable/explosive limit</li> <li>• Vapour pressure</li> <li>• Vapour density</li> <li>• Relative density</li> <li>• Solubility</li> <li>• Partition coefficient — n-octanol/water</li> <li>• Auto-ignition temperature</li> <li>• Decomposition temperature</li> <li>• Viscosity</li> </ul>
10 Stability and reactivity	<ul style="list-style-type: none"> <li>• Reactivity</li> <li>• Chemical stability</li> <li>• Possibility of hazardous reactions</li> <li>• Conditions to avoid (e.g., static discharge, shock, or vibration)</li> <li>• Incompatible materials</li> <li>• Hazardous decomposition products</li> </ul>
11 Toxicological information	<p>Concise but complete description of the various toxic health effects and the data used to identify those effects, including:</p> <ul style="list-style-type: none"> <li>• Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact)</li> <li>• Symptoms related to the physical, chemical, and toxicological characteristics</li> <li>• Delayed and immediate effects, and chronic effects from short-term and long-term exposure</li> <li>• Numerical measures of toxicity</li> </ul>

SDS section and heading	Specific information elements
12 Ecological information***	<ul style="list-style-type: none"> <li>• Ecotoxicity</li> <li>• Persistence and degradability</li> <li>• Bioaccumulative potential</li> <li>• Mobility in soil</li> <li>• Other adverse effects</li> </ul>
13 Disposal considerations***	Information on safe handling for disposal and methods of disposal, including any contaminated packaging
14 Transport information***	<ul style="list-style-type: none"> <li>• UN number</li> <li>• UN proper shipping name</li> <li>• Transport hazard class(es)</li> <li>• Packing group</li> <li>• Environmental hazards</li> <li>• Transport in bulk, if applicable</li> <li>• Special precautions</li> </ul>
15 Regulatory information***	Safety, health, and environmental regulations specific to the product
16 Other information	Date of the latest revision of the SDS

+ The supplier that must be identified on an SDS is the initial supplier identifier (i.e., the name, address, and telephone number of either the Canadian manufacturer or the Canadian importer). There are two exceptions to this requirement. In a situation where a hazardous product is being sold by a distributor, the distributor may replace the name, address, and telephone number of the initial supplier with their own contact information. In a situation where an importer imports a hazardous product for use in their own workplace in Canada (i.e., the importer is not selling the hazardous product), the importer may retain the name, address, and telephone number of the foreign supplier on the SDS and label instead of substituting their own contact information.

\* These impurities and stabilizing products are those that are classified in a health hazard class and contribute to the classification of the material or substance.

\*\* Each ingredient in the mixture must be listed when it is classified in a health hazard class and:

- Is present above the concentration limit that is designated for the hazard class in which it is classified, or
- Is present in the mixture at a concentration that results in the mixture being classified in any health hazard class

\*\*\* Sections 12 to 15 require the headings to be present, but under Canadian regulations, the supplier has the option to not provide information in these sections.

# WHMIS 2015 implementation plan checklist

Activity	Date needed	Assigned to	Date completed
<b>Assign responsibility for WHMIS implementation</b>			
1			
2			
3			
<b>Establish an inventory of hazardous products</b>			
Determine which products used or produced are classified as hazardous products under WHMIS.			
<b>WHMIS labels and SDSs</b>			
Develop labels and SDSs for hazardous products produced in the workplace.			
Obtain SDSs for hazardous products already in the workplace.			
Develop a process for requesting and receiving SDSs for new purchases.			
Develop methods to store SDSs so that they are readily available to workers.			
Develop a process to ensure that supplier labels are on or available for all new hazardous products received.			
Develop a process to ensure that information on SDSs and supplier labels is updated as soon as significant new data is provided.			
Develop a process to create and provide workplace labels and other means of identification.			

Activity	Date needed	Assigned to	Date completed
<b>Determine hazards</b>			
Identify and evaluate the hazards of hazardous products in the workplace (for example, consider the quantities to be used and stored, and the work processes where these products are used).			
<b>Workplace controls</b>			
<p>Based on the hazard evaluation, determine where the following workplace controls may need to be established or upgraded:</p> <ul style="list-style-type: none"> <li>• Substitution of a less-hazardous product</li> <li>• Engineering controls such as local exhaust ventilation and process modification</li> <li>• Administrative controls such as work procedures and work scheduling</li> <li>• Personal protective equipment and clothing</li> </ul>			
Integrate these controls into the overall health and safety program.			
<b>Emergency procedures</b>			
Review first aid procedures and upgrade them if required.			
Review spill control procedures and upgrade them if required.			
Review firefighting procedures and upgrade them if required.			
Notify the local fire department of the location, types, and quantities of hazardous products used and stored.			

Activity	Date needed	Assigned to	Date completed
<b>Worker education and training</b>			
Complete the “WHMIS 2015 education and training checklist” (page 86).			
<b>Evaluate WHMIS program</b>			
<p>Establish a periodic review process for the following:</p> <ul style="list-style-type: none"> <li>• Check to ensure that no SDS is more than three years old.</li> <li>• Check that all required items on the SDS are present and have been completed.</li> <li>• Check the condition and presence of labels for all hazardous products.</li> <li>• Monitor workplace controls to ensure they are effective.</li> <li>• Review the WHMIS requirements, including education and training, at least annually.</li> </ul>			

# WHMIS 2015 education and training checklist

Activity	Assigned to	Date completed
<b>Development</b>		
Consult the occupational health and safety committee or worker representative on the development, implementation, and review of the program.		
Identify all hazardous products used in the workplace.		
Evaluate the hazards of each hazardous product.		
Identify WHMIS instructors, from either internal or external sources.		
Educate and train instructors (if internal), or evaluate their qualifications (if external).		
Identify employees to be educated and trained — those who work with or near hazardous products.		
Establish a process to identify new employees and contractors who require education and training.		
Evaluate labels and SDSs to be used in the education and training program (check for clarity, accuracy, and completeness).		
Evaluate safe work and emergency procedures to be used in the WHMIS education and training program.		
<b>Education and training</b>		
Provide a general introduction to WHMIS (for example, discuss responsibilities, labels, and SDSs).		
Provide instruction on how to identify hazardous products.		
Provide instruction on control measures and safe work procedures.		
Provide instruction on emergency procedures.		

Activity	Assigned to	Date completed
Provide instruction on accessing information on hazardous products.		
Evaluate the need for additional or specialized instruction to workers (for example, to those with language or learning difficulties), and provide this instruction where required.		
Provide instruction to workers whenever new products are received or new hazard information becomes available.		
Provide training on workplace-specific control measures and safe work procedures.		
Provide training on workplace-specific emergency procedures.		
<b>Follow-up activities</b>		
Evaluate workers' understanding of WHMIS using suitable means such as written tests and practical demonstrations. Provide further education and training as required.		
Review the effectiveness of the education and training program at least once a year. (Reviews must be done in consultation with the occupational health and safety committee or the worker representative.)		





# 8 Resources

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# WorkSafeBC resources

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WorkSafeBC produces a variety of WHMIS publications and videos, many of which are available online at no charge (see links below). Hard copy versions of some of these resources can be ordered from the WorkSafeBC Store:

Phone: 604.232.9704

Toll-free phone: 1.866.319.9704

Fax: 604.232.9703

Toll-free fax: 1.888.232.9714

Online ordering: [worksafebcstore.com](http://worksafebcstore.com)

## WHMIS information

For links to a wide range of WHMIS information, visit [worksafebc.com/en/health-safety/hazards-exposures/whmis](http://worksafebc.com/en/health-safety/hazards-exposures/whmis)

## Occupational Health and Safety Regulation and OHS Guidelines

Available online at [worksafebc.com](http://worksafebc.com).

[worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation](http://worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation)

- Part 5, Chemical Agents and Biological Agents, Workplace Hazardous Materials Information System (WHMIS)  
[worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-regulation/part-05-chemical-and-biological-substances#F90B861D458E46028AAE4F574CC2CC7C](http://worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-regulation/part-05-chemical-and-biological-substances#F90B861D458E46028AAE4F574CC2CC7C)
- Guidelines G5.3-1 to G5.15, Workplace Hazardous Materials Information System (WHMIS)  
[worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-guidelines/guidelines-part-05#7BE29C5F4B2942A58E5B8E037C6D9B7D](http://worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-guidelines/guidelines-part-05#7BE29C5F4B2942A58E5B8E037C6D9B7D)

## Videos

*WHMIS 2015 for Employers*

[worksafebc.com/en/resources/health-safety/videos/whmis-2015-for-employers](http://worksafebc.com/en/resources/health-safety/videos/whmis-2015-for-employers)

In less than six minutes, this video explains the primary changes from WHMIS 1988 to WHMIS 2015: new hazard classes, new labelling requirements, and a revised safety data sheet format. It also describes your responsibilities as an employer.

### *WHMIS 2015 for Workers*

[worksafebc.com/en/resources/health-safety/videos/whmis-2015-for-workers](https://worksafebc.com/en/resources/health-safety/videos/whmis-2015-for-workers)

This four-minute video helps workers understand the primary changes from WHMIS 1988 to WHMIS 2015 — new hazard classes, new labelling requirements, and a revised safety data sheet format — as well as the responsibilities of their employers to provide education and training.

### **Publications**

#### *WHMIS 2015: The Basics*

[worksafebc.com/en/resources/health-safety/whmis/whmis-basics-2015](https://worksafebc.com/en/resources/health-safety/whmis/whmis-basics-2015)

By understanding the information in this book, workers learn where to look on the labels of hazardous products, where to look on safety data sheets, and what to discuss with their supervisors. Workers also learn about key changes from WHMIS 1988 to WHMIS 2015.

# Other sources of information

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## Organizations

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Contact the following organizations for publications mentioned in this book or for other relevant WHMIS publications.

### **Canadian Centre for Occupational Health and Safety**

135 Hunter Street East

Hamilton ON L8N 1M5

Phone: 1.800.668.4284

Website: [ccohs.ca](http://ccohs.ca)

The CCOHS provides a wide range of health and safety information for both workers and employers. Examples of WHMIS 2015 training resources include the *WHMIS 2015 Instructor's Toolkit* and the *WHMIS 2015 Participant Workbook*.

### **Workplace Hazardous Materials Bureau of Health Canada**

269 Laurier Avenue West, 7th Floor (4903E)

Ottawa, Ontario K1A 0K9

Telephone: 1.855.407.2665

Teletypewriter: 1.800.465.7735 (Service Canada)

Website: [canada.ca/en/health-canada/corporate/contact-us/workplace-hazardous-materials-information-system.html](http://canada.ca/en/health-canada/corporate/contact-us/workplace-hazardous-materials-information-system.html)

Email: [WHMIS\\_SIMDUT@hc-sc.gc.ca](mailto:WHMIS_SIMDUT@hc-sc.gc.ca)

The Workplace Hazardous Materials Bureau of Health Canada coordinates the administration of WHMIS and serves as the coordinator for the governance and administration of WHMIS in Canada. Health Canada also acts as the secretariat for this federal, provincial, and territorial government partnership system. In addition, Health Canada handles claims for exemptions for confidential business information (CBI).

### **Commission des normes, de l'équité, de la santé et de la sécurité du travail**

Répertoire toxicologique

1199, rue de Bleury, 3e étage

CP 6056, SUCC Centre-Ville

Montréal QC H3C 4E1

Phone: 514.906.3080, poste 2304

Website: [reptox.csst.qc.ca](http://reptox.csst.qc.ca)

The CNESST's toxicological directory provides information on the classification of chemicals and health and safety risks.

### **Other organizations**

A variety of organizations may be able to help you establish your WHMIS program. These include:

- Your suppliers or manufacturers
- Trade and industry associations
- Labour organizations
- WHMIS consulting firms
- Occupational safety and health media organizations
- Libraries, trade schools, and colleges

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## **Federal legislation**

### ***Hazardous Products Act***

[laws.justice.gc.ca/eng/acts/H-3/FullText.html](http://laws.justice.gc.ca/eng/acts/H-3/FullText.html)

### **Hazardous Products Regulations**

[laws-lois.justice.gc.ca/eng/regulations/SOR-2015-17/index.html](http://laws-lois.justice.gc.ca/eng/regulations/SOR-2015-17/index.html)

### ***Hazardous Materials Information Review Act***

[laws-lois.justice.gc.ca/eng/acts/H-2.7/FullText.html](http://laws-lois.justice.gc.ca/eng/acts/H-2.7/FullText.html)

### **Hazardous Materials Information Review Regulations**

[laws-lois.justice.gc.ca/eng/regulations/SOR-88-456/FullText.html](http://laws-lois.justice.gc.ca/eng/regulations/SOR-88-456/FullText.html)







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