

WHMIS — Information for Employers



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Introduction

What does W-H-M-I-S mean?

The letters W-H-M-I-S stand for “Workplace Hazardous Materials Information System.”

WHMIS is a national hazard communication system. It affects suppliers, importers, distributors of potentially hazardous materials used at work sites and employers and workers who use those materials.

WHMIS was implemented in 1988 through coordinated federal, provincial and territorial legislation.

What is the purpose of WHMIS?

WHMIS was developed to ensure that workers receive adequate hazard information about chemicals that are used at their work site. The system requires suppliers and distributors of controlled products to provide specified hazard information to their customers. The customers, acting as employers, must pass that hazard information on to their workers.

WHMIS was developed to ensure that workers receive adequate hazard information about chemicals that are used at their work sites.

WHMIS has three elements:

- (1) *Labels* — WHMIS labels provide some basic information that a person needs to know to handle a particular product safely.
- (2) *Material Safety Data Sheets (MSDSs)* — MSDSs provide technical information about a product’s physical characteristics and its hazardous properties.
- (3) *Worker education* — Worker education provides workers with two kinds of information:
 - a general overview of WHMIS
 - specific hazard information and safe-work procedures they can use directly at their jobs.

WHMIS Legislation

WHMIS was implemented through coordinated federal, provincial and territorial legislation. Federal legislation, administered by Health Canada, addresses supplier labelling and MSDS requirements. Provincial, territorial and federal agencies responsible for occupational health and safety are responsible for the employer and worker aspects of WHMIS through legislation enacted in each jurisdiction.

WHMIS was implemented through coordinated federal, provincial and territorial legislation.

WHMIS legislation for labelling and MSDSs

Federal legislation specifies requirements for supplier labels and MSDSs and requires suppliers to provide users with MSDSs when products are purchased. It also allows confidential business information to be protected.

Federal legislation for WHMIS consists of the:

- *Hazardous Products Act (HPA)*
- *Controlled Products Regulations (CPR)*
- *Ingredient Disclosure List*
- *Hazardous Materials Information Review Act*
- *Hazardous Materials Information Review Regulation.*

To obtain copies of federal documents that set out WHMIS supplier MSDS and label requirements, see Appendix 1.

WHMIS legislation for the work site

Individual provincial and territorial jurisdictions develop and administer legislation that defines employer and worker responsibilities under WHMIS.

Alberta's WHMIS law is contained in Part 29 of the *Occupational Health and Safety (OHS) Code*. The legislation was developed under the authority of the *OHS Act*, which establishes the fundamental principles of Alberta's occupational health and safety law.

All of Alberta's OHS legislation is available online through the Occupational Health and Safety Web site at <http://humanservices.alberta.ca/working-in-alberta/295.html> or directly from the Queen's Printer (see Appendix 1).

Please note that terms that appear in quotation marks in this document are quoted directly from WHMIS legislation.

WHMIS is not the same as TDG

The federal *Transportation of Dangerous Goods* (TDG) law is not the same as WHMIS legislation.

The TDG law protects the general public from hazards associated with transporting dangerous materials on public roads, in the air, by rail or on waterways. In contrast, WHMIS protects the health and safety of workers at work sites by providing workers with hazard information about the chemicals they work with. The two systems often deal with the same chemicals, but TDG addresses their transport and WHMIS addresses their handling at work sites.

The federal
*Transportation of
Dangerous Goods*
(TDG) law is not the
same as WHMIS
legislation.

What happens if an employer doesn't comply with the WHMIS laws?

An employer found violating the WHMIS laws is subject to legal procedures. The outcome of the procedures depends on factors such as the seriousness of the violation and the employer's compliance history.

Violation of the federal WHMIS law may result in seizure of products and/or prosecution. Successful prosecution may result in a fine of up to \$1,000,000 and/or imprisonment for up to two years.

Violations of the provincial WHMIS law may result in orders to make changes to the work site, shut down of work-site operations or prosecution. Successful prosecution for violation of Alberta's *Occupational Health and Safety Act* or its regulations may result in a fine of up to \$1,000,000 and/or imprisonment for up to one year.

Application of WHMIS Legislation

Does WHMIS apply to every chemical?

No. WHMIS only applies to products that meet certain criteria. These products are called controlled products.









There are six classes of controlled products. A product that meets the criteria for any one (or more) of the six WHMIS classes is a controlled product and is included in WHMIS. A few products have been excluded from WHMIS requirements because they are covered by other legislation.

A product that meets the criteria for any one (or more) of the six WHMIS classes is a controlled product and is included in WHMIS.

There is no comprehensive list of controlled products. The only way to find out if a product is a controlled product is to compare its properties with the criteria for each of the six classes of controlled products.

Figure 1, The WHMIS classes and hazard symbols, shows the six WHMIS classes and their hazard symbols. The WHMIS classification criteria are contained in the federal *Controlled Products Regulations*.

Figure 1 The WHMIS classes and hazard symbols

WHMIS HAZARD CLASSES		
A	COMPRESSED GAS	
B	FLAMMABLE AND COMBUSTIBLE MATERIAL	
C	OXIDIZING MATERIAL	
D	POISONOUS AND INFECTIOUS MATERIAL	 1. MATERIALS CAUSING IMMEDIATE AND SERIOUS TOXIC EFFECTS  2. MATERIALS CAUSING OTHER TOXIC EFFECTS  3. BIOHAZARDOUS INFECTIOUS MATERIAL
E	CORROSIVE MATERIAL	
F	DANGEROUSLY REACTIVE MATERIAL	

Each class of controlled products has a distinct hazard symbol. Class D has one symbol for each of its three divisions. Class B has six divisions, but all six are represented by the same hazard symbol.

Which products are excluded from WHMIS?

Two groups of products are totally or partially excluded from the WHMIS requirements.

Totally excluded products

Products excluded from all aspects of WHMIS are:

- wood and products made of wood
- tobacco and products made of tobacco
- manufactured articles
- dangerous goods while they are covered by TDG legislation, that is, while they are in transit or being handled for transportation
- hazardous wastes (except that legislation *does* require hazardous wastes to be safely stored and handled, which means that employers must ensure hazardous wastes are identified and workers handling them are trained).

“**Products made of wood**” and “**products made of tobacco**” do not include products made *from* wood and products made *from* tobacco. For example, lumber, which is made of wood, and cigarettes, which are made of tobacco are exempt from WHMIS. On the other hand, turpentine, which is made from wood, and nicotine, which is extracted from tobacco, are included.

Lumber, which is made of wood, and cigarettes, which are made of tobacco are exempt from WHMIS.

“**Manufactured articles**” means products manufactured to a specific shape, and whose function depends on that shape. Manufactured articles do not release controlled products during normal use. Coated pipe is an example of a product that is exempt from WHMIS because of this provision. The coating material may have been a controlled product when it was applied, but it is not released during normal use of the pipe. Welding rods, on the other hand, are not exempt, because they release controlled products (as welding fumes) during normal use.

Materials that are considered manufactured articles, yet release controlled products while they are being installed, even so may be exempt from WHMIS. New carpet, for example, usually releases certain gases during installation and for a short time afterwards. But installation is not “normal use.” So carpet is considered a manufactured article and is totally exempt from WHMIS.

Alberta OHS legislation covers harmful substances

Even though manufactured articles are exempt from WHMIS, Alberta’s legislation addresses materials that are hazardous but are not controlled products. These hazardous materials are called “harmful substances.” Employers have three responsibilities regarding harmful substances. They must:

- ensure that harmful substances or their containers are clearly identified
- establish procedures to minimize worker exposure to these substances
- train workers in those procedures and in the health hazards associated with exposure to the harmful substance.

Even though manufactured articles are exempt from WHMIS, Alberta’s legislation addresses materials that are hazardous but are not controlled products.

Partially excluded products

While WHMIS MSDS and label requirements do not apply to the following products, the employer is still required to provide WHMIS training for workers using or working near them:

- explosives, which are covered by the *Explosives Act*
- cosmetics, devices, and foods and drugs that are covered by the *Food and Drug Act*
- pesticides and herbicides that are covered by the *Pest Control Product Act*
- radioactive materials that are covered by the *Nuclear Safety and Control Act*
- consumer products covered by the *Canada Consumer Product Safety Act* - includes chemicals subject to the labeling and packaging requirements in the Consumer Chemicals and Containers Regulations.

The training provided to workers for the above products should include the labelling and/or information provided with products, e.g. what consumer chemical labels look like and mean, as well as procedures for using the products safely in the workplace.

“**Consumer products**” mean products packaged in quantities appropriate for and available to the public in retail outlets, and labelled with the labelling required by the *Consumer Chemicals and Containers Regulations*. For example, a solvent that is packaged in a 250-millilitre container and offered for sale in a hardware store is considered a consumer product. The WHMIS consumer-product exemption applies. The supplier does not have any WHMIS responsibilities. Yet the same product packaged in a 454-litre drum, and sold at an industrial supply outlet, would not be permitted this exemption. It is considered a controlled product and all WHMIS supplier requirements would apply.

Who classifies controlled products?

Canadian suppliers must classify the controlled products they sell.

Employers are responsible for classifying products produced on site for use on site if:

- they are made for use at the work site,
- they were imported directly to the work site.

Classification can be complicated. An employer that does not have occupational health and safety personnel or chemists on staff may wish to get outside help. The Canada Centre for Occupational Health and Safety (CCOHS) can help with the classification of pure substances. Private consultants are available to help with the classification of more complex products.

Appendix 2 lists some resources available to help employers classify products.

Roles and Responsibilities

What are my responsibilities as an employer?

Alberta’s *OHS Act* requires employers to take all reasonable measures to protect the health and safety of workers at their companies. WHMIS is an important tool for employers to use in achieving this goal.

Employers play an important role in implementing WHMIS. The employer is responsible for ensuring that:

- all controlled products at their work sites are labelled with appropriate WHMIS labels
- WHMIS MSDSs are up-to-date — that means no more than three years old

Alberta’s
*Occupational Health
and Safety Act*
requires employers
to take all reasonable
measures to protect
the health and safety
of workers at their
companies.


- WHMIS MSDSs are provided for all controlled products at the work site, and these MSDSs are located in a place readily accessible to everyone who works there
- workers at the work site have received the appropriate WHMIS worker education to protect their health and safety on the job.

Do my workers have any WHMIS responsibilities?

The *OHS Act* requires workers to cooperate with their employers to protect their own and other workers' health and safety on the job.

A booklet and Safety Bulletin similar to this one, (*WHMIS — Information for Workers* (CH007)), is available from Human Services, Occupational Health and Safety.

The *Occupational Health and Safety Act* requires workers to cooperate with their employers to protect their own and other workers' health and safety on the job.

 http://humanservices.alberta.ca/documents/WHIS-Pub_ch007.pdf
WHMIS — Information for Workers — CH007

WHMIS — Information for Workers provides an overview of the WHMIS system, and requirements for labelling, Material Safety Data Sheets and worker education. The bulletin also describes suppliers', employers' and workers' responsibilities.

What are suppliers' responsibilities?

Canadian suppliers of controlled products have two main WHMIS responsibilities. They must:

- (1) label each controlled product they sell to Canadian work sites with an appropriate WHMIS supplier label that provides information written in both English and French
- (2) develop a WHMIS MSDS for each controlled product they sell to Canadian work sites. They must provide a copy of that MSDS (in English or French, as the customer chooses), to each Canadian work-site customer.

Distributors of controlled products have the same responsibilities as suppliers. Distributors are expected to provide employers with the same WHMIS information they would get from a supplier.

Supplier labels

A controlled product cannot be used until you have received and applied the correct label. In fact, you may store it at your site *only if* you are actively seeking the proper label, and if you have placed a placard over the product. (Placards are discussed on page 17.) You may only store the product on site without a supplier or work-site label for a maximum of 120 days.

A controlled product cannot be used until you have received and applied the correct label.

The same restrictions apply if a supplier sends you a controlled product for which you have not received a WHMIS MSDS. You may store the product, but you may not use it until you obtain the WHMIS MSDS.

You may refuse to accept a product that arrives at your site without the proper WHMIS label or MSDS.

Working with foreign suppliers

WHMIS is Canadian law. It applies only in Canada. Your foreign suppliers may not be aware of the law. Even if they do know about WHMIS, they may not be willing to comply with its requirements for suppliers.

Employers that import controlled products into Canada for use at work sites are responsible for complying with WHMIS. The employer must ensure that WHMIS supplier labels are developed and applied to the products they import, and that WHMIS MSDSs for the products are obtained.

Importers have these responsibilities for products that are imported for sale to other Canadian work sites and for products that are imported for use within the importing company. If you import a controlled product for use at your work site, you are responsible for ensuring that it has a WHMIS supplier label and a WHMIS MSDS.

Importing products without WHMIS labels

Importers may bring controlled products into Canada without a WHMIS supplier label or a WHMIS MSDS. However, the WHMIS Coordinator at Alberta Human Services must be notified, and the WHMIS requirements met before the product is used or sold.

Remember, you must put WHMIS supplier labels on controlled products and develop WHMIS MSDSs for them before you can use or sell them.

Notification to the WHMIS coordinator must include:

- product identification and description (that is, the product's classification)
- the address in Alberta where the supplier label will be applied
- a list of the other provinces where the product will be imported.

Send the notification to:

WHMIS Coordinator
 Alberta Human Services
 Safe, Fair and Healthy Workplaces
 8th Floor, 10808 - 99 Avenue
 Edmonton, Alberta T5K 0G5

After reviewing the notification, the WHMIS Coordinator may also request:

- a sample of the product
- import schedule
- information about the quantity of product to be imported.

What is the Alberta government's role in WHMIS?

In Alberta, WHMIS is administered by Human Services. Its two major roles in implementing WHMIS at Alberta workplaces are consultation and enforcement. Human Services consults with Alberta employers, suppliers and workers to help them understand their WHMIS responsibilities and provides WHMIS information materials and references, including publications that address many aspects of chemical safety.

Human Services enforces both federal and provincial WHMIS legislation in Alberta. Occupational health and safety officers inspect Alberta work sites for compliance with WHMIS (and for compliance with other Alberta OHS legislation). Officers explain violations to the parties responsible for the work site, specifying a date for compliance. If violations continue, more stringent measures may be taken. Officers may issue compliance orders, close sites, seize product and initiate prosecution. Some officers are also designated as federal WHMIS inspection officers and can also inspect supplier work sites for compliance with the *Hazardous Products Act* and *Controlled Products Regulations*

Occupational Health and Safety officers inspect Alberta work sites for compliance with WHMIS (and for compliance with other Alberta occupational health and safety legislation).

Labels

Types of labels

The most common types of WHMIS labels are supplier and work-site labels.

The most common types of WHMIS labels are supplier and work-site labels.

Supplier labels are the labels that must appear on controlled products in their original (supplier) containers. These products include:

- controlled products sold by Canadian suppliers and distributors to Canadian work sites
- controlled products imported into Canada for use at work sites

Work-site labels are used in the workplace. They are applied to:

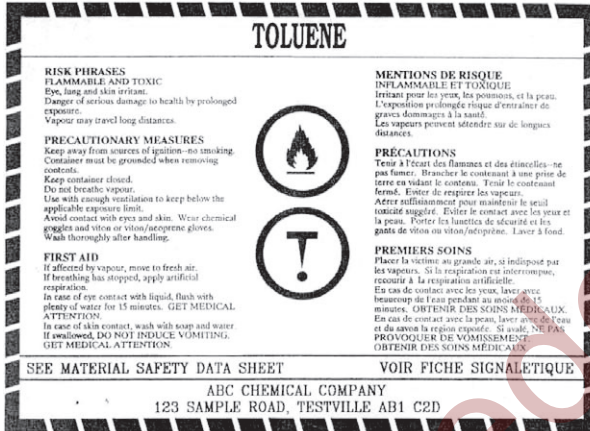
- containers into which controlled products are transferred
- containers of controlled products that are produced at the work site for use at the work site
- supplier containers, to replace supplier labels (and labels that are accepted as supplier labels, such as labels on pesticides and consumer products) that have been damaged or defaced, where new supplier labels cannot be obtained.

Different information requirements apply to supplier labels and work-site labels. In certain situations the basic requirements are relaxed and less detailed labels may be used. See **Variations on the basic supplier label**, below.

The basic WHMIS supplier label

Figure 2, An example of a WHMIS supplier label, illustrates a typical WHMIS label. Supplier labels are easy to recognize because they have a unique, rectangular slash-marked border.

Figure 2 An example of a WHMIS supplier label



The basic WHMIS supplier label contains seven required pieces of information.

The basic WHMIS supplier label contains seven required pieces of information. The information must appear within the rectangular border. **Figure 3, Information required on a WHMIS supplier label**, lists these requirements. The supplier label information must be written in both French and English. The only acceptable alternative to this requirement is the use of two, equally visible, labels, one in French and one in English.

There is no specified format for the WHMIS label. While there is no specific size requirement, information on the label must be large enough to be legible.

Finally, the label must be located on the product in a location where the label will be easy to see.

Figure 3 Information required on a WHMIS supplier label

<p>1. Product Identifier Same as on MSDS</p> <p>2. Supplier Identifier Identifies manufacturer or distributor, as appropriate</p> <p>3. Hazard Symbols All WHMIS hazard symbols applicable to the product's classification</p> <p>4. Risk Phrases Brief statements of main risks associated with the product</p> <p>5. Precautionary Measures Brief statements of main precautions to be taken when handling the product</p> <p>6. First Aid Measures Main first aid measures to be taken in case of acute overexposure</p> <p>7. Reference to the Material Safety Data Sheet For more detailed information</p>
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Variations on the basic supplier label

There are five situations when the basic supplier label might vary. These pertain to the labelling of:

- (1) small containers (less than 100 millilitres)
- (2) products purchased in bulk
- (3) products sold by laboratory supply houses
- (4) products sent to laboratories for analysis
- (5) compressed gas cylinders and grinding wheels.

Labels for small containers

Labels for small containers may carry a shorter version of the information on the basic supplier label. Containers with a capacity of 100 ml or less are allowed to carry WHMIS supplier labels without the headings: Risk Phrases, Precautionary Measures or First Aid Measures.

Labels for small containers may carry a shorter version of the information on the basic supplier label.

Figure 4 An example of a WHMIS small container label



Labels for products purchased in bulk

“Bulk shipment” has a special meaning in WHMIS. Legislation defines a bulk shipment as:

- “a shipment of controlled product that is contained without immediate containment or intermediate packaging, in
- (a) a vessel with a water capacity of more than 454 litres,
 - (b) a freight container, a road vehicle, a railway vehicle, a portable tank, a freight container carried on a road vehicle, railway vehicle, ship or aircraft, or a portable tank carried on a road vehicle, railway vehicle, ship or aircraft,
 - (c) the hold of a ship, or
 - (d) a pipeline.”

When selling materials in bulk, suppliers may satisfy the WHMIS labelling requirements in one of three ways. Suppliers can:

- (1) provide employers with a regular supplier label, supplying it separately when the product is delivered or before delivery
- or
- (2) modify the product’s MSDS so that it contains the supplier label information as well as information required on the MSDS
- or
- (3) send the supplier label information as a separate document.

Keep in mind that the supplier is allowed to make this choice. If the supplier sends you a supplier label, you must attach it to your container of the product. If the supplier chooses one of the other two options, you must use the information provided to make a work-site label and apply that label to the product's container.

Labels for products sold by laboratory supply houses

Controlled products used in laboratories may have regular WHMIS supplier labels. However, controlled products from laboratory supply houses, intended for use in laboratories or packed in quantities of 10 kilograms or less may be labelled with either of two supplier label variations:

- (1) with all of the information required on a WHMIS MSDS, in which case the supplier is not required to provide a separate MSDS to the customer
- or
- (2) with a basic supplier label that omits the WHMIS border, the hazard symbols and the supplier identifier.

Labels for products sent to laboratories for analysis

It is not always clear how to label samples for laboratory analysis. Sometimes it is not possible to determine whether the sample is a controlled product or not. Sometimes samples are sent for analysis to determine if the product meets one or more of the WHMIS classification criteria.

If you are faced with this dilemma, you are expected to use your best judgment as to whether the material is a controlled product and then treat it accordingly. Samples sent to a laboratory should, as a general rule, have a basic supplier label and be accompanied by a WHMIS MSDS. Sometimes there is no MSDS for the product because its properties have not yet been determined. For example, the sample may be from a newly developed product. It is not possible to have an MSDS when the product is first being analyzed and evaluated.

Samples sent to a laboratory should, as a general rule, have a basic supplier label and be accompanied by a WHMIS MSDS.

Such a sample (if it is less than 10 kilogram) may still be sent to the laboratory, even though the MSDS cannot accompany it. These special samples must be labelled with the following information:

- sample identifier (a product name or other identifying information)

- identity of the sample ingredients that are themselves controlled products, if known
- name of the person sending the sample
- the statement “Hazardous Laboratory Sample. For hazard information or in an emergency call,” followed by an emergency telephone number for the person sending the sample.

The label, as shown in **Figure 5, Label for a sample of a controlled product with no MSDS**, does not require the cross-hatched border.

Figure 5 Label for a sample of a controlled product with no MSDS

Sample for Analysis	
Sample number:	203
Contents:	Toluene, xylene, water
Name of person sending sample:	John Ranchman
Hazardous Laboratory Sample	
For hazard information, or in an emergency call: (403) 297-4034	

Products such as explosives, pesticides and some consumer products are subject to the federal legislation listed on page 6. In these cases, federal labelling requirements apply.

Labels for compressed gas cylinders and grinding wheels

Labels for these products may be curved to reduce distortion and improve readability.

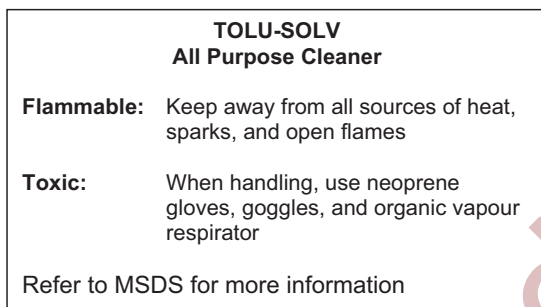
What does a WHMIS work-site label look like?

Work-site labels are “performance-oriented.” This means that the contents of the labels must provide workers with the information they need to handle the product safely. There are no format, language or WHMIS border requirements. **Figure 6, An example of a WHMIS work-site label**, illustrates a sample work-site label.

Work-site labels have only three required content elements:

- product identifier (name of product)
- information for safe use of the product
- reference to the MSDS.

Figure 6 An example of a WHMIS work-site label



Variations to the WHMIS work-site label

Variations to the WHMIS work-site label include the use of placards, warning signs and coding either by a colour, number or lettering system. Employers must ensure that workers are trained, and understand, the labelling system used.

Placards (Signs)

Sometimes it is more practical to use a placard to draw attention to information about controlled products than to label them. The WHMIS law permits this variation in the following situations:

- controlled products that are not in containers
- controlled products that have been produced for sale but have not yet reached the labelling stage of the production process
- controlled products that are destined for export only.

A placard must include the same information that a WHMIS work-site label includes. The placards must be large enough to be easily read and must be placed so that they are obvious to workers.

Placards may be used when a controlled product arrives at the work site without the required supplier label and you store it while you track down the WHMIS supplier label. (See page 11 - **Types of labels**, for basic supplier label information.)

Other approved identification methods

There are five situations in which you may use any method of clear identification to label controlled products. They apply to:

- controlled products in on-site transport or in reaction systems such as pipes, tanks, tank trucks, ore cars, conveyor belts, reaction vessels, etc.
- mixtures and substances undergoing analysis, tests or evaluation in a laboratory
- controlled products that are being transferred from other (adequately labelled) containers, kept under the control of the person who is making the transfer, and used up during the shift in which the container is filled
- controlled products, for use in laboratories, which are transferred from the supplier's containers to laboratory containers, or controlled products produced in laboratories for use there only
- hazardous wastes produced in the workplace.

These materials may be identified by any clear means, such as painted-on, stencilled-on, or even hand-written identifiers or colour codes.

Controlled products that don't require a WHMIS label

Only two groups of controlled products do not require a WHMIS label:

- (1) controlled products for immediate use
- (2) fugitive emissions.

A “**controlled product for immediate use**” is one that is transferred from one properly labelled container to another container, and is then transferred immediately from the second container for use in some chemical process where it will be totally consumed. The transfer container need not have any type of WHMIS label. An example of this situation is the measuring of a chemical before adding it to a chemical reaction vessel.

“**Fugitive emissions**” are spread through the air or over a surface, therefore they cannot be labelled. However, the equipment from which the emissions escape must be labelled with an appropriate work-site label.

Where do WHMIS labels come from?

Canadian suppliers of controlled products are required to provide labels for the products they sell.

If you import controlled products for your organization's use, you are responsible for creating supplier labels and applying them to the products.

You may be fortunate enough to have suppliers who are able, and willing, to provide you with supplier labels. If not, the responsibility falls to you. You may have staff who can do this for you. If not, you will need outside expertise. Once you have developed the content and design of the labels, you can have them produced in-house or through commercial printing facilities.

Many printing houses and safety-equipment suppliers carry commercially printed, blank work-site labels. If you don't want to buy labels, you can write the required information directly on product containers or use readily available materials to make the labels. The most important aspect of such labels is that the information is readable and remains attached to the product container under normal conditions of use and storage.

Material Safety Data Sheets (MSDSs)

What is a Material Safety Data Sheet?

Material Safety Data Sheets, or MSDSs, contain information that is more detailed and more technical than the information on WHMIS labels. MSDSs have at least nine required categories of information, as shown in **Figure 7, Information required on a WHMIS Material Safety Data Sheet**.

There are no format requirements for WHMIS MSDSs. Any format that includes the required information is acceptable. It does not require the WHMIS border. However, each of the nine categories must be identified by a heading identical or similar to that shown in **Figure 8, Example of a basic WHMIS MSDS**.

If you import controlled products for your organization's use, you are responsible for creating supplier labels and applying them to the products.

MSDSs contain information that is more detailed and more technical than the information on WHMIS labels.

Figure 7 Information required on a WHMIS Material Safety Data Sheet

1. Hazardous ingredients	
▪ Required ingredients	
▪ CAS registry number	
▪ UN number	
▪ LD ₅₀ (species and route)	
▪ LC ₅₀ (species and route)	
2. Preparation information	
▪ Person or group responsible for preparation, and telephone number	
▪ Date of preparation	
3. Product information	
▪ Product identifier	
▪ Product use	
▪ Manufacturer's name, address, and emergency telephone number	
▪ Supplier's name, address, and emergency telephone number	
4. Physical data	
▪ Physical state	▪ Evaporation rate
▪ Odour and appearance	▪ Boiling point
▪ Odour threshold	▪ Freezing point
▪ Specific gravity	▪ pH
▪ Vapour pressure	▪ Coefficient of water/oil distribution
▪ Vapour density	
5. Fire or explosion hazard	
▪ Conditions of flammability	▪ Flash point and method of determination
▪ Means of extinction	▪ Upper flammable limit
▪ Lower flammable limit	▪ Explosion data – sensitivity to mechanical impact
▪ Auto-ignition temperature	▪ Explosion data – sensitivity to static discharge
▪ Hazardous combustion products	
6. Reactivity data	
▪ Conditions of instability	
▪ Substances with which product is incompatible	
▪ Condition of reactivity	
▪ Hazardous decomposition products	
7. Toxicological properties	
▪ Route of entry	▪ Carcinogenicity
▪ Effects of acute exposure	▪ Reproductive toxicity
▪ Effects of chronic exposure	▪ Teratogenicity
▪ Exposure limits	▪ Mutagenicity
▪ Irritancy of product	▪ Toxicologically synergistic products
▪ Sensitizing properties	
8. Preventive measures	
▪ Personal protective equipment	▪ Handling procedures/equipment
▪ Engineering controls	▪ Storage requirements
▪ Spill/leak procedures	▪ Shipping information
▪ Waste disposal	
9. First aid measures	
▪ Specific first aid measures	

Figure 8 Example of a basic WHMIS MSDS

MATERIAL SAFETY DATA SHEET				
SECTION 1 — PRODUCT IDENTIFICATION AND USE				
PRODUCT IDENTIFIER				
PRODUCT USE				
MANUFACTURER'S NAME		SUPPLIER'S NAME		
STREET ADDRESS		STREET ADDRESS		
CITY	PROVINC	CITY	PROVINC	
POSTAL CODE	EMERGENCY TELEPHONE NO	POSTAL CODE	EMERGENCY TELEPHONE NO	
SECTION 2 — HAZARDOUS INGREDIENTS				
HAZARDOUS INGREDIENTS	%	CAS NUMBER	LD ₅₀ OF INGREDIENT (SPECIFY APPROX. ENDPOINTS)	LD ₅₀ OF INGREDIENT (SPECIFY APPROX. ENDPOINTS)
SECTION 3 — PHYSICAL DATA				
PHYSICAL STATE		COLOUR AND APPEARANCE		ODOUR THRESHOLD (ppm)
VAPOR PRESSURE (mm Hg)	VOLATILITY (mg/L)	EVAPORATION RATE	BOILING POINT (°C)	FREZING POINT (°C)
PH	SPECIFIC GRAVITY	DENSITY (WATER/20°C)		
SECTION 4 — FIRE AND EXPLOSION DATA				
FLAMMABLE				
YES <input type="checkbox"/> NO <input type="checkbox"/> IF YES, UNDER WHICH CONDITIONS?				
NEAR OF EXISTION				
FLASHPOINT (°C) AND METHOD		SPONTANEOUSLY IGT (°C) AND METHOD	ONSET TEMPERATURE (°C) AND METHOD	
AUTOIGNITION TEMPERATURE (°C)		HAZARDOUS COMBUSTION PRODUCTS		
EXPLOSION DATA	SENSITIVITY TO IMPACT		SENSITIVITY TO STATIC CHARGE	
SECTION 5 — REACTIVITY DATA				
CHEMICAL STABILITY				
YES <input type="checkbox"/> NO <input type="checkbox"/> IF NO, UNDER WHICH CONDITIONS?				
INCOMPATIBILITY WITH OTHER SUBSTANCES				
YES <input type="checkbox"/> NO <input type="checkbox"/> IF NO, UNDER WHICH CONDITIONS?				
REACTIVITY AND UNSTABLE MIXTURES				
HAZARDOUS DECOMPOSITION PRODUCTS				

SECTION 6 — TOXICOLOGICAL PROPERTIES			
PRODUCT IDENTIFIER			
ROUTE OF EXPOSURE			
SKIN CONTACT <input type="checkbox"/>		SKIN ABSORPTION <input type="checkbox"/>	
EYE CONTACT <input type="checkbox"/>			
INHALATION <input type="checkbox"/>		INGESTION <input type="checkbox"/>	
EFFECTS OF CHRONIC EXPOSURE TO PRODUCT			
EXPOSURE LIMITS	IRITANTCY OF PRODUCT	SENSITIZATION TO PRODUCT	CARCINOGENICITY
TERATOGENICITY	REPRODUCTIVE TOXICITY	MUTAGENICITY	ENERGETIC PRODUCTS
SECTION 7 — PREVENTIVE MEASURES			
PERSONAL PROTECTIVE EQUIPMENT:			
GLOVES (SPECIFY)		RESPIRATOR (SPECIFY)	EYE (SPECIFY)
FOOTWEAR (SPECIFY)		CLOTHING (SPECIFY)	OTHER (SPECIFY)
ENGINEERING CONTROLS (SPECIFY, EG VENTILATION, ENCLOSED PROCESS)			
LEAK AND SPILL PROCEDURE			
WASTE DISPOSAL			
HANDLING PROCEDURES AND EQUIPMENT			
STORAGE REQUIREMENTS			
SPECIAL SHIPPING INFORMATION			
SECTION 8 — FIRST AID MEASURES			
SPECIFIC MEASURES			
SECTION 9 — PREPARATION DATE OF MSDS			
PREPARED BY (GROUP/DEPARTMENT, ETC)	PHONE NUMBER	DATE	

The final requirement for MSDSs is that they be up to date. Suppliers must update an MSDS whenever they become aware of new information, or every three years, whichever comes first. Canadian suppliers should never issue an MSDS that is more than three years old.

Variations to the basic MSDS

There are just two variations to the basic MSDS. Generic MSDSs are allowed for groups of controlled products that are basically the same but have small variations in ingredients from one product to another, for example, in a line of paints.

The generic MSDS must indicate the product identifiers for each individual product for all products in the group. Any information that is different for an individual product from that for the group must be included. Information that might vary from product to product within a group includes: additional ingredients, different concentrations of ingredients and different hazard information.

An MSDS that uses the International Organization for Standardization (ISO), International Labour Office (ILO), European Economic Community (EEC) or American National Standards Institute (ANSI) 16-section format is also acceptable as long as all of the information required in Canada's *Controlled Products Regulations* is provided. An MSDS that follows one of these formats should provide the following statement under the Regulatory Information heading:

"This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all the information required by the *Controlled Products Regulations*."

The 16-section ANSI-format MSDS requires information for each of these headings:

- Chemical product and company information
- Composition/information about ingredients
- Hazards identification
- First aid measures
- Firefighting measures
- Accidental release measures
- Handling and storage
- Exposure controls, personal protection

- Physical and chemical properties
- Stability and reactivity
- Toxicological information
- Ecological information
- Disposal considerations
- Transport information
- Regulatory information
- Other information

Obtaining MSDSs for controlled products

Canadian suppliers or distributors are required to provide purchasers with WHMIS MSDSs for controlled products. The MSDSs must be provided in English or French, at your request. If you don't specify which language you prefer, the supplier or distributor will send the MSDS in whichever of those languages you and the supplier usually communicate.

Employers are responsible for obtaining or developing MSDSs for controlled products at their work sites. This applies to controlled products imported from foreign suppliers and controlled products produced at the work site for use at the work site.

Suppliers may be able, and willing, to provide WHMIS MSDSs (as well as supplier labels) for "old" products or imported products. If not, this task will fall to you, the employer.

Employers are responsible for obtaining or developing MSDSs for controlled products at their work sites.

Who is responsible for updating MSDSs?

Canadian suppliers are required to provide purchasers of a controlled product with a current MSDS at the time of sale. It must be up to date and less than three years old. As an employer, you can expect your supplier to provide updated MSDSs (whenever they become available) for controlled products you buy on a regular basis. Whenever you receive an updated MSDS, replace the MSDS you currently have with the updated one.

Obtaining and maintaining MSDSs for controlled products that you buy only once or irregularly might be a bit more complicated. You can contact the supplier and request the current MSDS, but the supplier is not legally obligated to provide it unless you buy more of the product. Alternatively, you can ask the supplier for enough information to update the MSDS yourself. If the supplier does not

cooperate, you will have to use company staff, if they have the expertise, or a contractor, to get the MSDS updated. Otherwise you must stop using the product.

Your organization is responsible for updating MSDSs for controlled products that it uses or imports. They must be reviewed every three years (or whenever new hazard information becomes available) and updated as necessary.

Must suppliers disclose all product ingredients?

Certain information — physical properties, hazard information and preparation information — must always be revealed on the MSDS. None of these can be withheld.

Certain information — physical properties, hazard information and preparation information — must always be revealed on the MSDS.

However, WHMIS allows suppliers to protect certain secret information, called confidential business information, from disclosure on WHMIS supplier labels or MSDSs.

The information that qualifies as confidential business information is restricted to:

- the identity of any ingredient(s) in a controlled product
- the concentration of any ingredient(s)
- the identity of any toxicology study that would identify the ingredient(s).

Employers may withhold the product identifier (the name of the product) and information that would identify the supplier, as well as the same information that suppliers may withhold.

This information may be withheld only under certain conditions. Suppliers or employers wanting to withhold any information must file a claim with the appropriate authority.

If confidential business information has been withheld from a supplier label or MSDS, the MSDS clearly notes this. The secret information will be replaced with a registry number and the date on which the claim was filed (or date when the information was validated as secret). Confidential business information is discussed on page 32.

What is the required format for MSDSs?

Employers who want to standardize their organization's MSDS format may do so. In fact, standard-format MSDSs have many advantages. A consistent format from one sheet to the next makes it much easier for readers to find the specific information they are looking for. As well, using consistent wording throughout a collection of MSDSs makes accessing information easier for workers.

Employers who want to standardize their organization's MSDS format may do so.

Employer MSDSs must contain all of the information that was on the supplier MSDS. Additional hazard information that the employer is aware of should also be included on the employer MSDS. The employer must keep the original supplier MSDSs and must make them available to work-site personnel. The employer MSDSs must indicate this fact.

What controlled products used at work sites don't require MSDSs?

Controlled products such as pesticides and explosives are excluded from the WHMIS labelling and MSDS requirements. Suppliers are not required to provide or obtain MSDSs for these types of products, and employers are not required to obtain them. Neither are MSDSs required for intermediate products in reaction vessels. These chemicals have a very short life and are not present in the final product.

Finally, laboratory supply houses are permitted to sell certain controlled products without providing an MSDS if they are in packages of less than 10 kilograms and are sold for use in laboratories only. Instead of using a basic supplier label, employers must provide labels for these products. Labels must include all of the information required for the basic WHMIS MSDS.

Worker accessibility to MSDS

MSDSs must be readily available to workers who might want to see them. There is no specific rule about where they should be kept. However, the MSDSs must be kept in a place where workers have access to the information whenever they need it. You may wish to make extra copies of MSDSs so you can make them available at different areas of the work site. MSDSs can be made available in electronic format as long as workers can access them easily.

WHMIS Worker Education Programs

What does WHMIS worker education include?

WHMIS worker education includes generic and work-site-specific components.

WHMIS worker education includes generic and work-site-specific components.

Generic worker education programs

Generic worker education includes:

- a general introduction to WHMIS
- training in the required content of WHMIS labels and MSDSs
- training in the purpose and significance of that information to workers' health and safety on the job.

Generic WHMIS worker education is extremely important. Labels, and to an even greater extent, MSDSs, are the major source of hazard information for most workers. For this reason, it is very important for workers to know what information to expect on labels and MSDSs, and to understand what that information really means.

Work-site-specific education programs

WHMIS work-site-specific worker education programs must include four areas of instruction:

- (1) hazard information
- (2) the different modes of product identification used at the workplace
- (3) procedures for the safe use, storage and handling of controlled products used at the work site
- (4) procedures for dealing with fugitive emissions and emergencies at the work site.

Work-site-specific WHMIS education teaches workers about the hazard information applicable to the controlled products they work with or near, and about work procedures applicable to those products.

Hazard information includes all the safety precautions that a worker needs to know when working with or producing a controlled product. The work-site-specific worker education program must include all the hazard information provided by suppliers and all other hazard information of which the employer is aware.

Modes of product identification refer to colour codes, number codes and any other means of clear identification used to label controlled products in transfer systems or reaction vessels.

Work-site-specific instruction must include instruction in procedures for:

- the safe use, storage and handling of controlled products
- dealing with fugitive emissions, spills and work-site emergencies.

If this information has already been covered during operations training or other occupational health and safety training, and if that training meets the WHMIS worker education standard for effectiveness, the training need not be repeated for WHMIS purposes.

Do all workers require WHMIS worker education?

All work-site personnel who work with or close to controlled products, or who do work involved in the manufacture of a controlled product, must be provided with WHMIS worker education.

All workers who participate in the generic worker education program will receive the same information. But the work-site-specific components of a WHMIS education program will probably vary among groups of workers. The hazard information a person needs to know and the procedures in which a person is trained depends on the work the person performs.

The work-site-specific worker education program must include all the hazard information provided by suppliers and all other hazard information of which the employer is aware.

How often must WHMIS worker education courses be provided?

The WHMIS law doesn't specify how frequently worker education courses must be provided. Instead, the law provides a standard for the effectiveness of the training and requires that the standard be achieved on an ongoing basis.

What is the standard for WHMIS worker education?

A work-site-specific program is considered effective when workers can apply the information they were taught to protect their own health and safety on the job.

To decide if this standard has been met, an employer might offer practical or written tests or assess workers through job observation. The law does not specify how to conduct the training, how frequently it must be conducted or how to test for achievement of the standard. Ways to implement training and test for results is left to the employer to determine.

Workers have met the WHMIS education standard if they can answer the following four questions related to the controlled products they work with or near:

- (1) What are the hazards of the controlled product?
- (2) How are you protected from those hazards?
- (3) What do you do in case of an emergency?
- (4) Where can you get additional hazard information?

Asking these questions checks the worker's ability to read and understand a WHMIS label or MSDS.

The employer should review the education program at least once each year, or more often if conditions at the work site change or new information about a controlled product becomes available. This does not necessarily mean that re-instruction is required, but reviewing the program will identify whether it should be updated.

Who provides WHMIS training?

Many private companies provide training services to help employers develop or present generic WHMIS worker education. Employers can also prepare and deliver their own courses, as long as all the necessary information is covered.

Work-site-specific WHMIS worker education is another matter. It involves training personnel in procedures that are specific to your organization. Only rarely would an outside firm be familiar enough with those procedures to teach them to your staff. This training is best designed and provided by on-site personnel.

Confidential business information

What does “confidential business information” mean?

Confidential business information is specific information that would otherwise have to be revealed on a WHMIS label or MSDS but is a company secret that is financially valuable to the company. Genuine confidential business information may be withheld from disclosure on WHMIS labels or MSDSs.

Genuine confidential business information may be withheld from disclosure on WHMIS labels or MSDSs.

What information may be withheld as confidential business information?

Suppliers may withhold:

- the identity or concentration of one or more ingredients of a controlled product
- the names of toxicological studies that would identify those ingredients.

An employer may need to protect the identity of a product used at the company. The supplier may need to keep this information secret even from staff. For example, the product may be a secret ingredient in an important product that the company produces, or it may be a catalyst in a chemical reaction that occurs along the production line. The employer may need to keep this information secret even though the product supplier has no particular need to do so.

Employers may withhold the same information as suppliers. They may also withhold the product identifier or information that would identify the supplier if it is genuinely confidential business information.

Hazard information is never confidential

Hazard information can never be withheld from disclosure. Only the information described above may be withheld. Even that information may be withheld only if it is validated as WHMIS confidential business information.

Hazard information
can never be
withheld from
disclosure.

Who decides if the information is confidential business information?

Suppliers or employers wanting to withhold any of the information described above must file a claim with Health Canada.

The claim must demonstrate that the information is genuinely confidential business information.

A claim must contain the following information:

- the secret information
- evidence that the information is confidential
- the MSDS and/or label in the form in which the claimant wants to use it, that is, with the confidential information omitted but with all other required information included
- a filing fee.

Claims are reviewed to determine their validity and the product's MSDS and/or label are reviewed to ensure that the information is complete and accurate.

Claimants are given a registry number when they submit their claim. This number and the date the claim was submitted must be placed on the label and/or MSDS in place of the withheld information.

If the claim is accepted, the claimant must indicate this fact on the label and/or MSDS, along with the registry number and date the claim was validated.

If a claim is found to be not valid, the claimant is ordered to reveal the information that was to have been withheld, or to remove the product from the market.

Decisions may be appealed to a tripartite appeals panel. This is the final step that claimants may take to protect information from disclosure on WHMIS labels or MSDSs.

Claims are valid only in Canada

Importers of controlled products should note that trade secrets, proprietary information or registered trade secret claims registered in another country are not valid in Canada. The manufacturer must register their product in Canada if it wishes to withhold confidential business information.

What happens when an incident involving a controlled product contains a confidential ingredient?

Suppliers or employers who have been granted an exemption from disclosure of confidential business information must reveal that information to a medical professional if the information is needed for diagnosis or treatment of a medical emergency.

Suppliers or employers must also reveal the information to government inspectors who need it to conduct investigations into the health and safety of workers at work sites where the product is being used.

Persons who receive confidential business information under these circumstances are required to keep the information confidential. Anyone violating this requirement is subject to the same penalties as persons who violate the *Hazardous Products Act*.

Glossary

Acute exposure — a single exposure or exposure over a short time.

Acute toxic effects (acute toxicity) — effects that take place after a single exposure or after a short series of exposures within 24 hours.

American Conference of Government Industrial Hygienists (ACGIH) — an international association of occupational hygienists that develops many guidelines for the practice of occupational hygiene. One of the most important of these guidelines is *Threshold Limit Values and Biological Exposure Indices*. An updated version is published every year. This publication serves as the basis for occupational exposure limits in many jurisdictions around the world.

Auto-ignition temperature — the lowest temperature at which a substance ignites when no spark or flame is present.

Boiling point — the temperature above which a substance boils. Vapour is given off very rapidly at temperatures above the boiling point.

CAS Registry Number — the Chemical Abstracts Service Registry Number is a unique reference number used when searching for information about a particular chemical.

Canadian Centre for Occupational Health and Safety (CCOHS) — an occupational health and safety information service located in Hamilton, Ontario. The Centre provides publications on many occupational health and safety subjects and access to a very large collection of advice on occupational health and safety problems. Web site: www.ccohs.org

Chronic exposure — exposure to a low concentration of a substance over an extended period of time.

Chronic toxic effects (chronic toxicity) — effects that occur after chronic exposure or that occur a long time after exposure.

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

Combustion product — a product formed when a material is burned.

Complex mixture — a mixture that is a combination of many chemicals, has a commonly known generic name and is any of the following:

- naturally occurring
- a fraction of a naturally occurring mixture that results from a separation process
- a modification of a naturally occurring mixture
- a modification of a fraction of a naturally occurring mixture that results from a chemical modification process.

Condensation — a type of chemical reaction in which water is formed as a by-product.

Conditions of flammability — a subsection of the WHMIS MSDS that describes conditions under which a product will become flammable. These conditions could include pressure, heat, vibration, jarring or the presence of moisture or air.

Conditions of reactivity — a term on the WHMIS MSDS that describes conditions under which two or more materials will react together. These conditions could include the presence of light, elevated temperatures, aging or the absence of an inhibitor.

Controlled products — products, materials or substances that meet the criteria for one or more of the six WHMIS product classes.

Controlled Products Regulations — federal regulations written under the authority of the *Hazardous Products Act*. The regulations contain the details of suppliers' WHMIS responsibilities, including classification, supplier labels and WHMIS MSDSs.

Cumulative toxic effects — effects that usually occur after long-term exposure to a substance. Individual exposures occur many times and the effects accumulate. Even very small individual exposures may result in a toxic effect.

Date of preparation — is included on the WHMIS MSDS to indicate the date when the sheet was last updated. This date must never be more than three years old.

Decomposition — breakdown of a material into two or more different materials.

Decomposition product — a product that may be released as a result of aging or reaction with airborne oxygen or moisture.

Edema — accumulation of fluid in body tissues (swelling).

Engineering controls — a subsection of a WHMIS MSDS that includes measures for eliminating or reducing chemical hazards to which workers may be exposed. Examples include the substitution of less hazardous products, enclosure of processes to prevent the release of hazardous materials, or installation of local exhaust ventilation to remove airborne contaminants at their point(s) of generation.

Erythema — patches of reddened, bumpy skin.

Evaporation rate — a term on a WHMIS MSDS that indicates how quickly a substance vaporizes compared with butyl acetate (the evaporation rate of butyl acetate is 1). Substances with a high evaporation rate mix with air very quickly.

Explosion data — (sensitivity to impact) — a term on a WHMIS MSDS to indicate whether a product will explode if it is jarred or scraped.

Explosion data — (sensitivity to static discharge) — a term on a WHMIS MSDS to indicate whether a product will explode if it is exposed to static electricity.

Exposure limits — the concentrations of airborne chemicals that worker exposure at the work site may not exceed. Exposure limits have various names and often have different numerical values in different jurisdictions. In Alberta these limits are called Occupational Exposure Limits (OELs).

First aid measures — a subsection of a WHMIS MSDS that describes the main first aid actions to be taken if a worker is seriously overexposed.

Flash point — the lowest temperature at which a product gives off enough vapour to catch fire when it is exposed to a source of ignition. The lower the flash point, the greater the potential fire hazard. The MSDS must note beside the flash-point value the test method used to determine the flash point.

Freezing point — the temperature below which a liquid material becomes solid. It is identical to the melting point, which is the temperature above which a solid material becomes liquid.

Generic WHMIS worker education — the component of the WHMIS worker education program that includes a general introduction to WHMIS, training in the required content of WHMIS labels and MSDSs, and training in the purpose and significance of that information to workers' health and safety on the job.

Handling procedures/equipment — a subsection of a WHMIS MSDS that describes the basic precautions to be followed when handling a controlled product, or the basic equipment to be used during handling.

Hazard information — information on the safe use, storage and handling of a controlled product, including toxicological information.

Hazardous Materials Information Act — federal legislation that allows the protection of confidential business information. It specifies what information may be protected.

Hazardous Products Act (HPA) — federal legislation that specifies suppliers' responsibilities regarding "prohibited products," "restricted products" and "controlled products." WHMIS applies only to controlled products.

Importer — a person or company that brings a controlled product into Canada for sale to, or use at, a work site. Importers have the same WHMIS responsibilities as suppliers.

Incompatible substances — materials that, when combined with a specific product, cause the production of toxic or corrosive materials, excessive heat or an explosion.

Ingredient Disclosure List — a list of 1,736 chemicals, any of which, if present as an ingredient in a controlled product at a concentration greater than the cut-off concentration specified on the list, must be revealed on an MSDS. The *Ingredient Disclosure List* is not a list of controlled products. (There is no comprehensive list of controlled products.)

Irritancy — the ability of a product to cause local effects in the area where it contacts the body, such as the throat, eyes or skin. Effects could include redness, itching or swelling.

LC₅₀ (Lethal Concentration₅₀) — this is the unit for measuring the acute toxicity of chemicals that are inhaled into the body. It represents the amount of a chemical that will cause death in 50 per cent of a group of test animals. LC₅₀ values are usually expressed as ppm (parts of chemical per million parts of air) or mg/m³ (milligrams per cubic metre of air) for dusts, mists or fumes. LC₅₀ values vary with the species of animal and the length of exposure. This information can be found in brackets beside the LC₅₀ value, for example, LC₅₀ = 2 ppm (mouse, 4 hours).

LD₅₀ (Lethal Dose₅₀) — this is the unit for measuring acute toxicity of chemicals that enter the body through ingestion or skin absorption. It represents the amount of a chemical that will cause death in 50 per cent of a group of test animals. LD₅₀ values are usually expressed in mg/kg (milligrams of chemical per kilogram of animal body weight). LD₅₀ values vary with the animal species, the route of exposure and the length of exposure. This information can be found in brackets beside the LD₅₀ value, for example, LD₅₀ = 5 mg/kg (rat, oral, 8 weeks).

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

Means of extinction — a subsection of a WHMIS MSDS that describes the type of fire extinguisher to be used on a small fire involving the product, and the main firefighting agents to be used for a major fire.

Mutagenicity — a product's ability to change the genetic materials in the body cells of exposed persons. Mutations in germ cells (sperm and ova) may be passed on to the exposed person's children. Mutations to other cells affect only the person who was exposed.

Odour threshold — the lowest concentration of a substance that most people can smell.

Organic peroxide — a particular type of chemical. It is a very powerful oxidizer, highly self-reactive if heated or shocked, and very irritating to the skin, eyes, throat and respiratory tract.

Oxidizing material — any material that can give up oxygen or other oxidizing materials. Oxidizing materials stimulate combustion and are incompatible with flammable substances.

Personal protective equipment (PPE) — the clothing or equipment that a worker handling a hazardous material wears to reduce or prevent exposure to the substance. PPE includes coveralls, goggles, face shields, aprons, gloves and respirators.

pH — a measure of a substance's acidity or alkalinity. A pH of 7 is neutral. Substances with a pH of greater than 7 are alkaline (caustic). Alkalinity increases as the number increases. Substances with a pH of less than 7 are acidic. Acidity increases as the number decreases.

Physical state — indicates whether a product is a solid, liquid or gas.

Polymerization — the combination of simple molecules to form large chain-like macro-molecules. This reaction can sometimes be observed as the "hardening" of a "non-inhibited" liquid product.

Prohibited products — products that may not be sold, advertised or distributed in Canada. These products are dealt with in Part I of the *Hazardous Products Act*. They are not addressed by WHMIS.

Preparation information — a subsection of a WHMIS MSDS that identifies the person or group who prepared the MSDS and is able to explain the information on the MSDS or provide further information about the product if necessary. This section of the MSDS must include a telephone number for this person or group.

Reproductive toxicity — a product's ability to affect the fertility of persons exposed to it. The effects include changes in sperm or ova, and miscarriages.

Restricted products — products that must be labelled in a particular way if they are to be sold in Canada. They are dealt with in Part I of the *Hazardous Products Act*. Restricted products that are packaged in sizes appropriate for the general public, labelled as required by the *Consumer Packaging and Labelling Act* and offered for sale in ordinary retail outlets are considered, for the purposes of WHMIS, to be "consumer products."

Route of entry — the way a product enters the body. The most common routes for workplace chemicals to enter the body are inhalation, ingestion and absorption through the skin. Contact between a product and the skin does not necessarily result in the body absorbing the material. The material could cause a chemical burn or a rash on the surface of the skin or eye and never enter the body.

Sale (of a controlled product) — includes "offer for sale," "expose for sale" or "distribute."

Sensitization — a product's ability to affect the body's immune system so that further exposures at low concentrations may result in symptoms. These symptoms may be as minor as a slight irritation of the skin or as profound as severe respiratory distress. Different sensitizers cause different symptoms.

Shipping information — specific instructions on a WHMIS MSDS for preventing the development of "conditions of flammability, instability or reactivity" during shipping.

Specific gravity — the weight of a substance compared to the weight of an equal volume of water. Substances with a specific gravity greater than 1 are heavier than water. Substances with a specific gravity less than 1 are lighter than water.

Spill/leak procedures — a term on a WHMIS MSDS. These procedures describe the steps to be taken in the event of a spill or leak of the controlled product.

Storage requirements — specific instructions on a WHMIS MSDS for preventing “conditions of flammability, instability or reactivity” to develop during storage.

Supplier — a person or company that manufactures, processes or packages a controlled product, or that sells or imports a controlled product.

Synergism — a phenomenon that refers to the simultaneous effects of exposure to two substances. Synergistic substances cause effects that are greater than the sum of the effect caused by the two individual substances alone.

Teratogenicity — a product’s ability to cause damage to a fetus without affecting the pregnant female.

Threshold limit values (TLVs) — airborne concentrations of substances. TLVs represent conditions to which it is believed that nearly all workers may be exposed day after day without suffering adverse effects. The ACGIH developed this term.

Toxicity — a substance’s ability to cause adverse health effects in persons exposed to it.

Transportation of Dangerous Goods legislation (TDG) — federal legislation that controls the conditions under which dangerous materials may be transported on public roads, in the air, by rail or by ship. Its purpose is to protect the health and safety of persons in the vicinity of transport accidents involving those materials.

Upper explosive limit (UEL) or Upper flammable limit (UFL) — the greatest concentration of a substance in air that will burn or explode when it is exposed to a source of ignition. At concentrations greater than the UEL, the mixture is “too rich” to burn or explode. The UEL is the same as the UFL.

Vapour density — the weight of a vapour or gas compared to the weight of an equal volume of air. Substances with vapour densities greater than one sink and accumulate in low areas.

Vapour pressure — the pressure exerted by the vapour formed over a liquid in a closed container under standard test conditions and reported as an absolute pressure. Vapour pressure increases as temperature increases until the criteria temperature is reached.


Waste disposal — a term on a WHMIS MSDS that describes effective and environmentally safe ways to dispose of waste that contains the controlled product.

Work-site-specific WHMIS worker education — portion of the WHMIS worker education program that teaches workers about the hazard information applicable to the controlled products they work with or near, and about work procedures applicable to those products.

Superseded


Appendix 1 Obtaining WHMIS legislation

Alberta WHMIS legislation

 Alberta's *Occupational Health and Safety Act* (RSA 1980, Ch. 0-2), *Occupational Health and Safety Regulation* (AR 62/2003) and the *Occupational Health and Safety Code* are posted on the Human Services, Occupational Health and Safety web site at: <http://humanservices.alberta.ca/working-in-alberta/307.html>


Federal WHMIS legislation

Copies of federal documents that set out WHMIS supplier MSDS and label requirements are available at:

 http://www.hc-sc.gc.ca/ewh-semt/pubs/occup-travail/ref_man/index-eng.php
The Health Canada WHMIS Reference Manual incorporates unofficial versions of the *HPA* and *CPR*.

 Justice Canada Web Site <http://www.laws-lois.justice.gc.ca/eng/index.html>

Appendix 2 Resources

 http://www.worksafebc.com/publications/health_and_safety/whmis/pub_40_20_20_20.asp
WHMIS Core Manual. A Resource Manual for the Application and Implementation of WHMIS, British Columbia Workers' Compensation Board (2001)


 *Suppliers' Guide to WHMIS. Preparing Compliant Material Safety Data Sheets and Labels*, British Columbia Workers' Compensation Board (2001)


 http://www.worksafebc.com/publications/health_and_safety/whmis/pub_40_20_20_30.asp

 www.ccohs.org
Canadian Centre for Occupational Health and Safety (CCOHS)


Alberta Human Services Booklets, Safety Bulletins and Posters

 <http://humanservices.alberta.ca/working-in-alberta/307.html>
Occupational Health and Safety Code and Explanation Guide

 http://humanservices.alberta.ca/documents/WHIS/WHIS-PUB_ch007.pdf
WHMIS — Information for Workers

 http://humanservices.alberta.ca/documents/WHIS/WHIS-PUB_li011.pdf
WHMIS — International Format for Material Safety Data Sheets

 <http://humanservices.alberta.ca/documents/WHISep-ch006.pdf>
Check the Signs (poster)*

 <http://humanservices.alberta.ca/documents/gS009-Tips-On-Selecting-OHS-Consultant.pdf>
Tips on Selecting an OHS Consultant (GS009)

* Paper copies available by calling the Occupational Health and Safety Contact Centre in Edmonton (780) 415-8690. From other locations, call 1-866-415-8690.

Getting copies of OHS Act, Regulation & Code:

Queen's Printer

Occupational Health and Safety



www.qp.gov.ab.ca



<http://humanservices.alberta.ca/working-in-alberta/307.html>



Edmonton 780-427-4952


Call any Government of Alberta office toll-free
Dial 310-0000, then the area code and telephone number you want to reach


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Deaf or hearing impaired

- In Edmonton: **780-427-9999**
- or
- **1-800-232-7215** throughout Alberta

Web Site



www.worksafe.alberta.ca

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