WHMIS Training

The Benson Group Inc

TRAINING MODULE

Program on the updated WHMIS

WHMIS 1988 & WHMIS 2015

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WHMIS OVERVIEW

What is WHMIS ?

The **W**orkplace **H**azardous **M**aterials **I**nformation **S**ystem (**WHMIS**) is Canada's hazard communication standard that provides information on the safe use of hazardous material used in Canadian workplace .

Why was WHMIS created?

It was created in response to the Canadian **workers' right to know about the safety** and **health hazards** that may be associated with the **materials or chemicals they use at work**.

Exposure to hazardous materials can cause or contribute to many serious health effects such as effects on the nervous system, lung or kidney damage, cancer, sterility, rashes and burns.

Some hazardous materials are safety hazards and can cause fires or explosions.

WHMIS was created to help stop the injuries, illnesses, deaths, medical costs, and fires caused by hazardous materials.

WHMIS Objective

- Identify Hazardous materials on the work site
- Improve the communication of health hazard information of materials used on the work site
- Protect workers from exposure to hazardous materials through safety equipment, training, and procedures

WHIMIS 2015

- WHIMIS 2015 is updated version of WHIMIS 1988.
- Canada has aligned the WHMIS with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).
  - Hazardous Products Regulation
  - Aligned Internationally recognized system; GHS is a global system developed by United Nation
  - Comprehensive classification criteria
    - Hazard severity
  - Harmonized communication of chemical hazard information
    - Reduce worker risks
    - Mitigate hazard communication costs
    - Promote international trade

WHMIS 1988 System Important ?

- Yes. Keep in mind that education and training on the 'old' WHMIS 1988 system will be necessary for as long as workplace products have 'old' WHMIS style labels and MSDSs – for example, until the product is re-labelled or existing stock is used up. This situation will exist until the transition to WHMIS 2015 is complete by December 2018.

WHMIS 2015 vs. WHMIS 1988

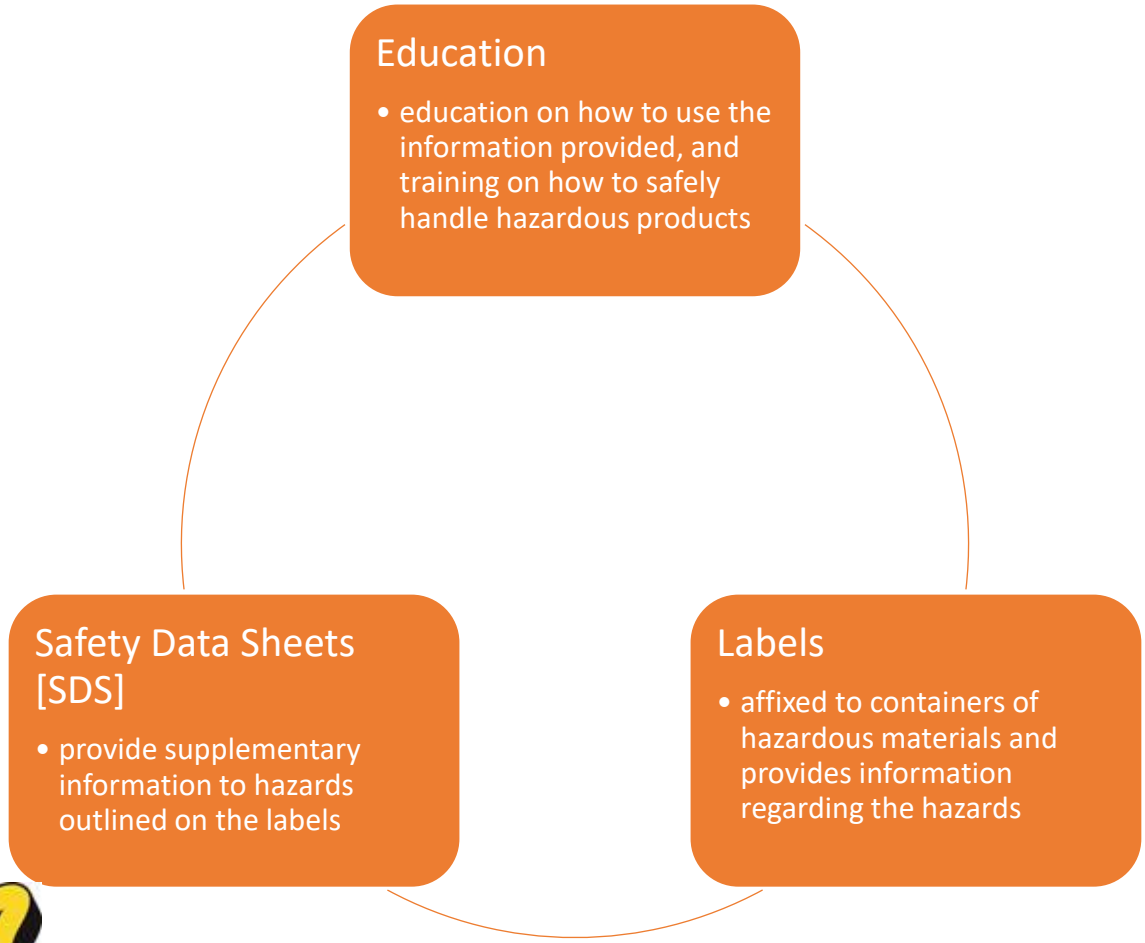
WHMIS 2015	WHMIS 1988
Hazardous Products Regulations	Controlled Products Regulations
32 Hazard Classes • Multiple hazard categories	6 Hazard Classes • 3 divisions
Safety Data Sheet (SDS) • 16 sections • No need to review	Materials Safety Data Sheet (MSDS) • 9 sections • Review every 3 years
Pictograms • Red square on one of its points	Symbols • Black cirlces

What are the main parts of WHMIS?

The main components of WHMIS are:

- hazard identification and product classification,
- labelling,
- safety data sheets(SDSs), and
- worker training and education.

3 BASIC ELEMENTS OF WHMIS



RIGHTS AND RESPONSIBILITIES

WHMIS Responsibilities

WHMIS is a shared responsibility amongst:

- Suppliers
- Employers
- Employees

WHMIS Responsibilities

Supplier Duties	Employer Duties	Worker Duties
✓ Provide labels and Safety Data Sheets for all hazardous products that they import or manufacture	✓ Make sure that Safety Data Sheets are easy for workers to find and read ✓ Make sure that containers in the workplace are labeled ✓ Provide WHMIS training	✓ Participate in WHMIS Training ✓ Use their knowledge of WHMIS to work as safely as possible

Additionally, workers have the right to refuse work that they believe is dangerous, know about the hazardous products that they work with and consult with the JHSC or the Health and Safety Representative.

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LEGISLATION

WHMIS is Law

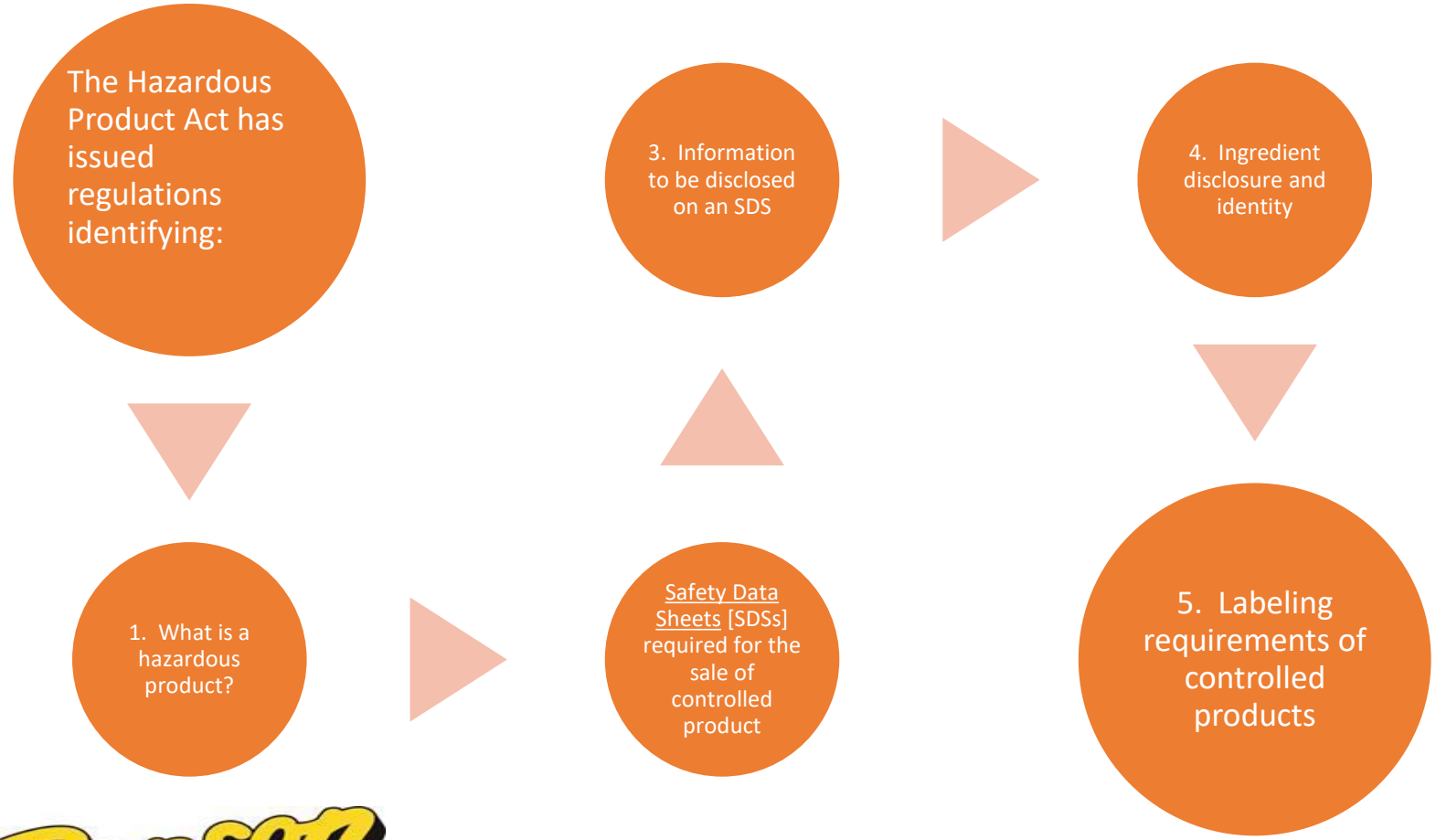
WHMIS became law effective October 31, 1988. It is enforced by a combination of federal and provincial legislation.

- Federal legislation requires suppliers/importers of hazardous materials (controlled products) to provide adequate labels and MSDSs as a condition of sale and importation.
- Federal, provincial, and territorial Occupational Safety and Health (OSH) legislation requires employers to provide labels, MSDSs, and worker education programs in the workplace.

WHMIS legislation includes:

- the HAZARDOUS PRODUCTS ACT and
- the HAZARDOUS MATERIALS INFORMATION REVIEW ACT.
- Updates to implement GHS will be referred to as WHMIS 2015

HAZARDOUS PRODUCT ACT



ROUTE TO ENTRY & SAFETY PROCEDURES FOR WORKERS

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Routes of Entry – Hazardous Product

Hazardous Materials can enter the body through

- Inhalation
  - Dust, mist, fumes and vapors can be inhaled in through your nose or mouth and travel into your lungs where they can begin to cause damage and even enter into your blood stream.
- Ingestion
  - Chemicals can easily be absorbed through your digestive system.
  - This can occur if you have hazardous materials on your hands while eating or smoking.
  - It's also possible to swallow chemicals if food is left uncovered in areas where there is a risk of exposure to the chemicals.
- Absorption
  - Some hazardous materials can also enter your body by passing through your skin.
  - The severity of the harm also varies drastically depending on what type of chemical has contacted you.
  - Some hazardous materials will cause your skin to become very sensitive, while others may pass directly through the skin and into the blood stream.
- Injection
  - Chemicals can enter the body and particularly the bloodstream through lacerations, punctures or syringe needles.

Hazards in the workplace can be controlled

- At the source
- Along the Path
- At the Worker

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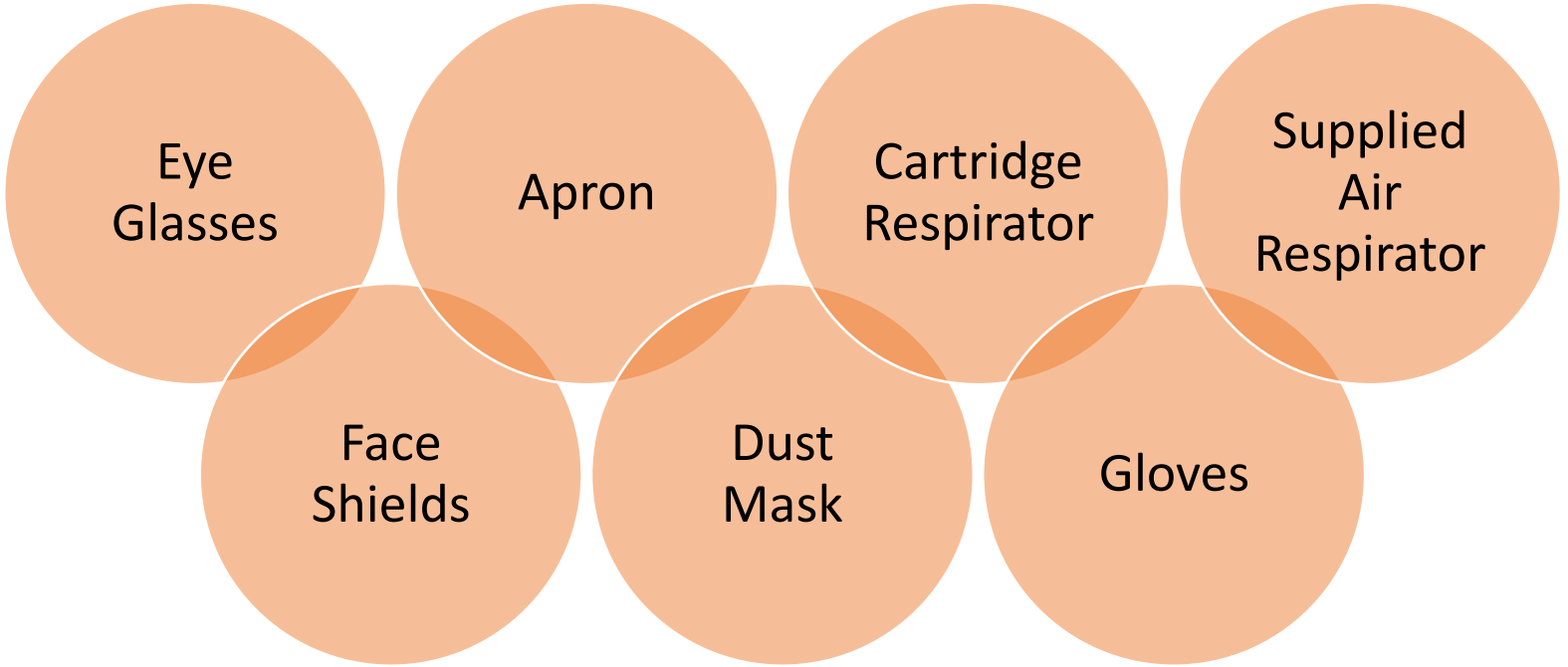
TYPES OF PERSONAL PROTECTIVE EQUIPMENT



CHOOSING THE CORRECT PERSONAL PROTECTIVE EQUIPMENT

Consult the **Safety Data Sheet [SDS]**

Review **Supplier Label** or **Workplace Label** on the controlled product being used

Ask your **supervisor** for assistance if necessary

As a worker, what should I do when using a hazardous product?

- 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. Follow any additional education, instructions, and training as provided by your employer.
- Ask your supervisor if you are not sure about how to use or store it.
- Ask for a new label when the old one cannot be seen or read properly.
- Do not use a product that is not labelled or if the label is unreadable. Ask your supervisor for help (e.g., to replace the label)

HAZARD CLASSIFICATIONS & DESCRIPTION

What are hazardous products?

The Hazardous Products Regulations set out specific hazard classification criteria. 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“.

What is a Hazardous Product? Cont.

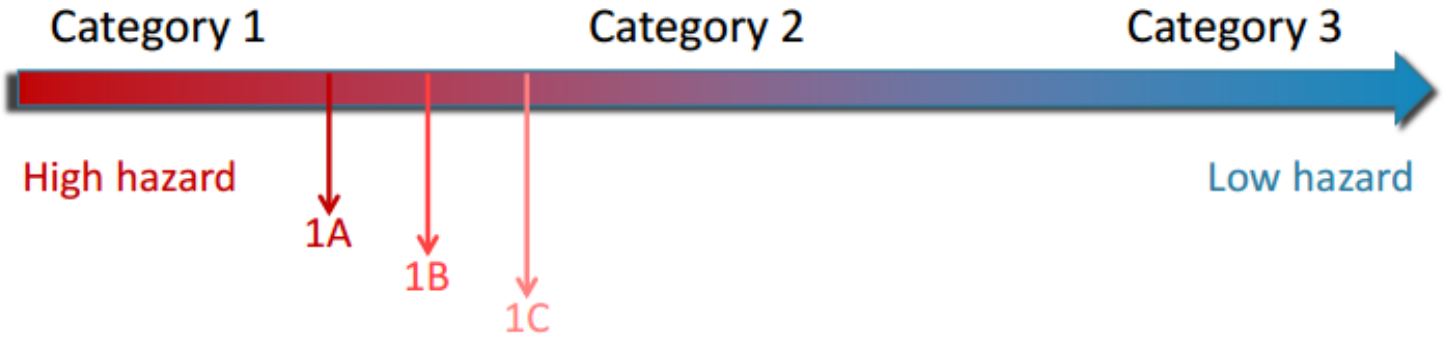
Hazardous products are materials, products, or substances that meet any of the criteria for one or more of the 32 GHS Hazard Classes as defined in the Federal Hazardous Products Regulation

- Hazard classes grouped into Physical Hazards and Health Hazards
- Hazard classes contain categories, subcategories, or types

WHMIS does not provide a comprehensive list of hazardous products, only a list of hazard criteria

WHMIS/GHS Hazard Categories

- All hazard classes have at least one hazard category
  - Categories are assigned a number (e.g 1,2,3)
    - Subcategories (e.g 1A, 1B, 1C)
  - Categories can also be referred to as types (e.g A,B,C)
- The lower the category number, the higher the hazard



WHMIS/GHS Hazard Groups and classes:

Physical Hazard Groups: based on physical and chemical properties of a given product.

All WHMIS 1988 **Hazard Classes** have been addressed in WHMIS 2015

Physical Hazard Classes includes:

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

WHMIS/GHS Hazard Groups and classes:

Health Hazard Groups: based on product's ability to result in a health related issues. All of the **Health Hazard Classes** address the hazards that were covered in WHMIS 1988

Health Hazard Classes

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

Physical Hazard Class Descriptions

Hazard Class(es)	Description
Flammable gases; Flammable aerosols; Flammable liquids; Flammable solids	Products can readily ignite, creating hazard for fire or explosion
Oxidizing gases; Oxidizing liquids; Oxidizing solids	Oxidizers that can cause a fire or explosion or intensify a fire
Gases under pressure	Gases under high pressure in a cylinder or container that have potential to explode and cryogenics that can cause severe burns
Self-reactive substances and mixtures	Products which may react to create a fire or explosion, or upon heating cause a fire or explosion
Pyrophoric liquids; Pyrophoric solids; Pyrophoric gases	Products that ignite spontaneously in the presence of air
Self-heating substances and mixtures	Products that can ignite in the presence of air after a duration of time

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Physical Hazard Class Descriptions Cont.

Hazard Class(es)	Description
Substances and mixtures which, in contact with water, emit flammable gases	Products that react with water to release a flammable gas
Organic peroxides	Upon heating, products that can cause a fire or explosion
Corrosive to metals	Products that are corrosive to metals
Combustible dust	Finely divided particles that, if in air, can catch fire or explode upon ignition
Simple asphyxiants	Gases that displace air, causing suffocation
Physical hazards not otherwise classified	Products that, based off of their physical and chemical properties, can result in serious injury or death of a person

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Health Hazard Class Descriptions

Hazard Class(es)	Description
Acute toxicity	Products that are fatal, toxic, or harmful if they come in contact with the skin, are inhaled, or swallowed
Skin corrosion/irritation	Products that can cause severe skin burns or irritations
Serious eye damage/eye irritation	Products that can cause severe eye damage or irritations
Respiratory or skin sensitization	Product that may cause asthma or allergy like symptoms or difficulty breathing
Germ cell mutagenicity	Products that may cause or are suspected to cause genetic defects
Carcinogenicity	Products that may cause or are suspected to cause cancer

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Health Hazard Class Descriptions Cont.

Hazard Class(es)	Description
Reproductive toxicity	Products that may cause damage or are suspected to damage ones fertility or an unborn baby
Specific target organ toxicity – single exposure	Products that can cause damage to organs following a single exposure
Specific target organ toxicity – repeated exposure	Products that can cause damage to organs following prolonged or repeated exposures
Aspiration hazard	Products that are fatal if swallowed or inhaled
Biohazardous infectious materials	Biohazardous materials (microorganisms, nucleic acids, proteins) that can cause infection, with or without toxicity, in humans and animals
Health hazards not otherwise classified	Products that may cause health hazards following single or repeated exposures, including risk of injury or death

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HAZARD SYMBOLS AND PICTOGRAM

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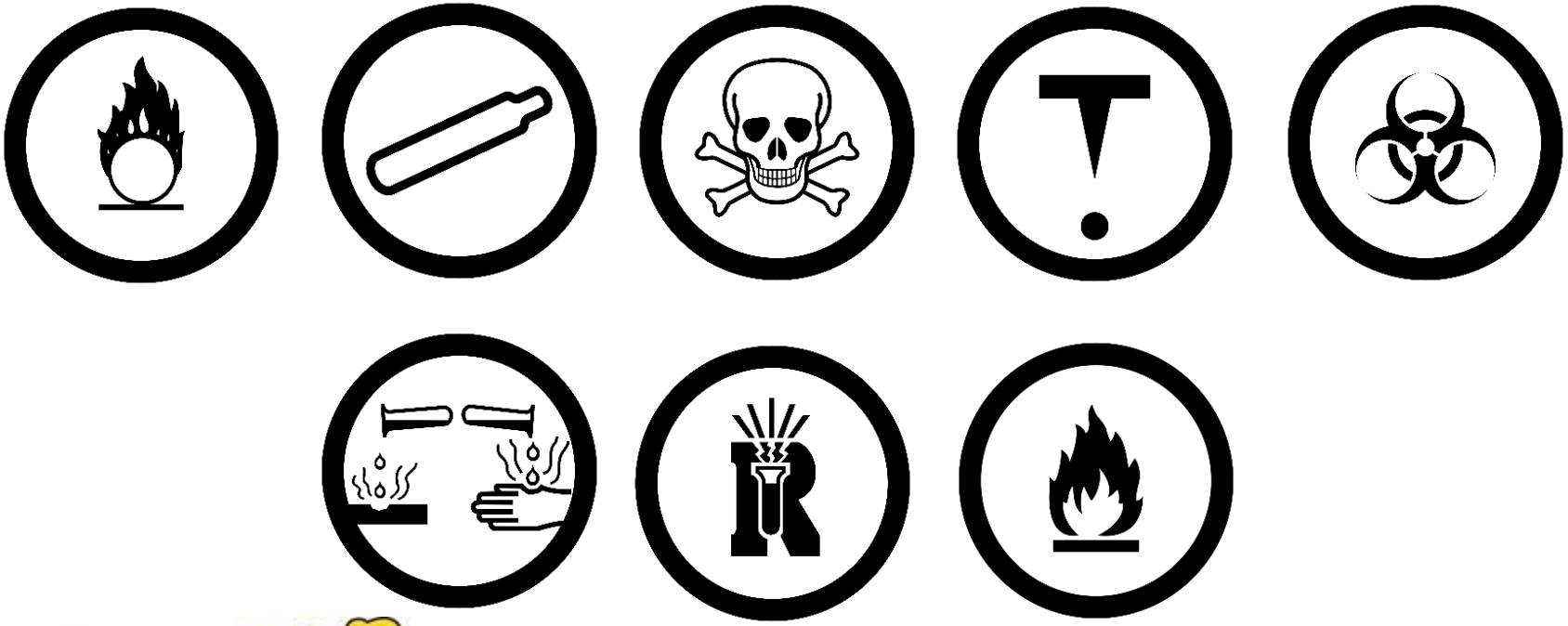
Symbols and Pictogram

- Even if you are just entering into the workforce, it's very likely that you have already seen some of the images displayed within symbols and pictograms.
- These images can sometimes be found on household products that you buy often, and possibly use on a regular basis.

Symbols and Pictogram

- **WHMIS 1988 Has Six Hazard Classes**

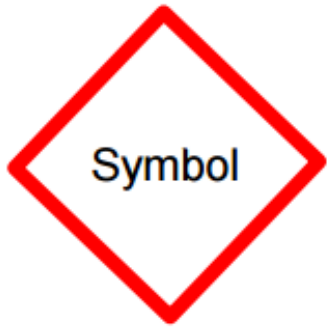


Pictogram

Pictogram are graphic images that immediately show the user of a hazardous product what type of hazard is present. For example, if the product is flammable or has a health hazard, you will be able to see it with a quick glance.

Most pictograms have a distinctive red "square set on one of its points" border. Inside this border is a symbol that represents the potential hazard (e.g., fire, health hazard, corrosive, etc.).

Together, the symbol and the border are referred to as a pictogram. Pictograms are assigned to specific hazard classes or categories.



Pictogram

The graphic below shows hazard pictograms. The bold type is the name given to the pictogram; the words in the brackets describe the hazard.

	**Exploding bomb** (for explosion or reactivity hazards)		**Flame** (for fire hazards)		**Flame over circle** (for oxidizing hazards)
	**Gas cylinder** (for gases under pressure)		**Corrosion** (for corrosive damage to metals, as well as skin, eyes)		**Skull and Crossbones** (can cause death or toxicity with short exposure to small amounts)
	**Health hazard** (may cause or suspected of causing serious health effects)		**Exclamation mark** (may cause less serious health effects or damage the ozone layer*)		**Environment*** (may cause damage to the aquatic environment)
	**Biohazardous Infectious Materials** (for organisms or toxins that can cause diseases in people or animals)				

* The GHS system also defines an Environmental hazards group. This group (and its classes) was not adopted in WHMIS 2015. However, you may see the environmental classes listed on labels and Safety Data Sheets (SDSs). Including information about environmental hazards is allowed by WHMIS 2015.

1988 Symbols vs 2015 Pictograms

- WHMIS pictograms are denoted by symbols inside red “diamond” shaped borders
- Some WHMIS 1988 symbols have been fully replaced and are non-existent in the new system
- The red borders of WHMIS 2015 over the black images are more prominent
- Pictograms are more specific
- WHMIS 2015 pictograms are universally accepted

LABELS

Labeling controlled products

Under WHMIS regulations most hazardous products must be labeled.

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Supplier labels and workplace labels are the only two types used in WHMIS.

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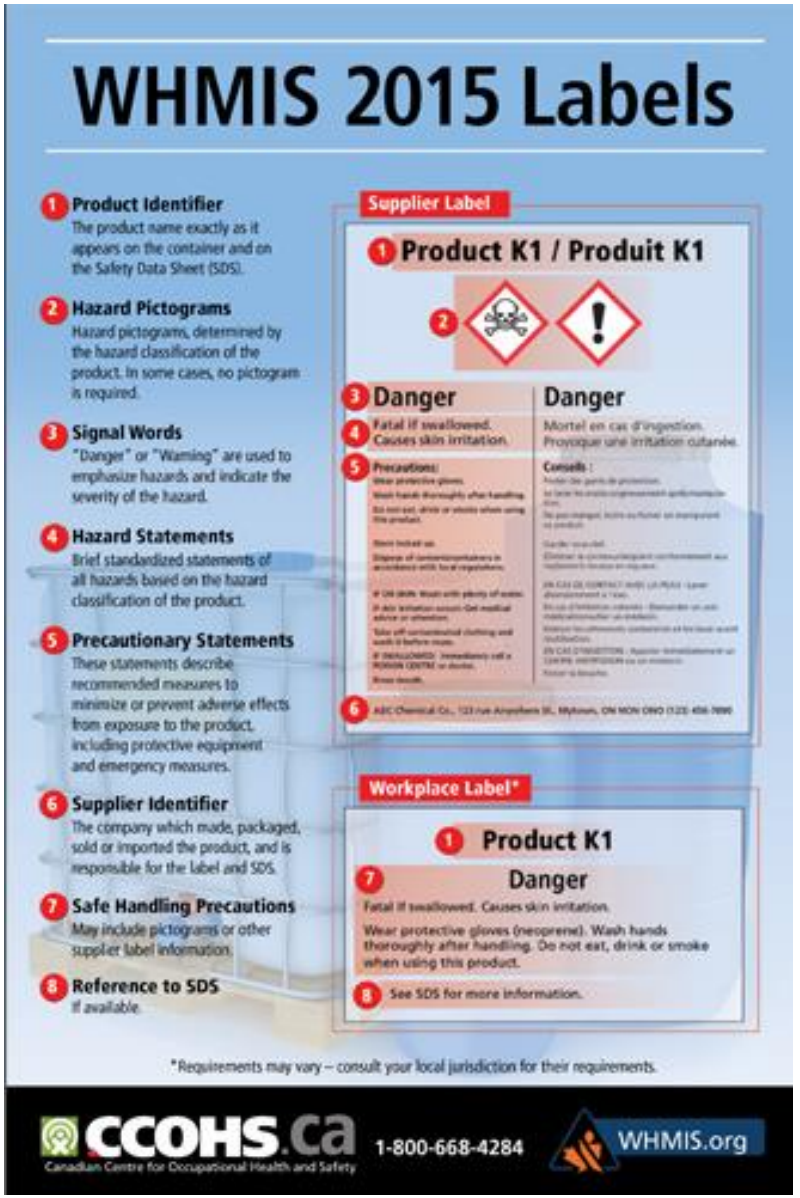
All WHMIS labels have to be clear, easy to read and prominently displayed on the product container.

Supplier labels

Display these eight pieces of information:

1. Product Identifier
2. Hazard Pictogram
3. Signal Word
4. Hazard statement(s)
5. Precautionary statement(s)
6. Supplier Identifier
7. Safe Handling Precautions
8. Reference to SDS

Information contained must be in English and French



Supplier Label – What is signal word?

- 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 (Hazards Identification) of the Safety Data Sheet (SDS).
- Some hazard classes or categories do not have a signal word assigned to them.

Supplier Label – What is hazard statement?

Each hazard class and category (explained in upcoming slides) has an assigned “hazard statement”. They are brief standardized sentences that tell you more about the exact hazard of the product.

Example of hazard statement are:	Fatal if inhaled
	Contains gas under pressure; may explode if heated
	Causes eye irritation
	May cause cancer
	Extremely flammable gas

Another thing to keep in mind is that, the wording used in these statement is important as it describes the degree of the hazard. For example: “may cause cancer” is more hazardous than “Suspected to

Supplier Label – What is precautionary statement?

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 and harmonized.

There are five types of precautionary statements:

General – E.g. Read before use	Prevention – E.g. Keep container tightly closed	Response (including first aid) – E.g. If inhaled , get medical attention/advise	Storage – E.g. Store away from other materials	Disposal – E.g. Dispose of content in accordance with regulatory requirements.

Supplier Label – What does it look like?

There is no set format for a supplier label. As mentioned, labels must be in English and French. They may be bilingual (as one label), or be presented as two labels (one each in English and French).

Labels will require the following:

- the pictogram, signal word, and hazard statement are to be grouped together,
- to be clearly and prominently displayed on the container,
- to be easy to read (e.g., you can see it easily without using any item except corrective glasses), and
- to be in contrast with other information on the product or container.

Product K1 / Produit K1

Danger

Fatal if swallowed.
Causes skin irritation.

Precautions:

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.

Danger

Mortel en cas d'ingestion.
Provoque une irritation cutanée.

Conseils :

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.

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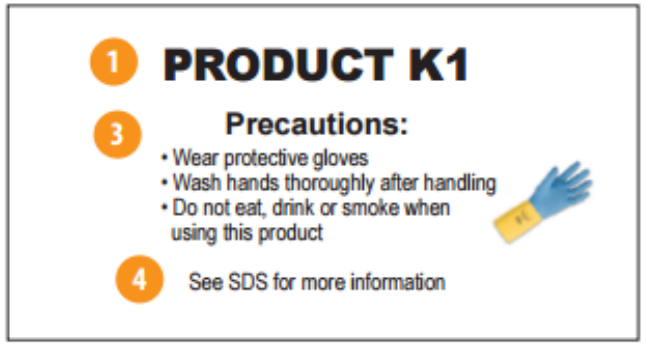
Workplace labels

The label is the employee's first source of information about hazard of a product. In WHMIS 2015, the label should include following information:

1. Product name (matching the SDS product name)
2. Hazard pictogram (optional)
3. Precautionary statements.
4. Reference to a safety data sheet (SDS) for further information,



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SAFETY DATA SHEETS

Safety Data Sheets (SDSs)

WHMIS 1988	WHMIS 2015
Material Safety Data Sheet	Safety Data Sheet

Safety Data Sheets (SDSs)

- All hazardous products must have a SDS
  - It provides more detailed hazard information than labels
- Suppliers must supply a current SDS at the time of sale
  - Suppliers must update the SDS when they become aware of any significant new data
- SDS must be accessible to all workers
  - Store in a readily accessible area known to everyone
  - Referenced and understood before handling a hazardous product

Safety Data Sheets (SDSs)

Section	Hazardous Products Regulations Heading
1	Identification
2	Hazard Identification (including classification and label text)
3	Composition/information on ingredients
4	First – aid measures
5	Fire – fighting measures
6	Accidental release measures
7	Handling and storage
8	Exposure controls/personal protection
9	Physical and chemical properties
10	Stability and reactivity
11	Toxicological information
12-15	Ecological, transport and regulatory information, disposal considerations (For these sections, headings are required but information is not mandatory)
16	Other information

SDS Section 1 & 2 Information

1. **Identification**
   - Product identifier
   - Additional methods of identification
   - Recommended use
   - Usage restrictions
   - Canadian supplier identifier
2. **Hazard identification**
   - Hazard classification
     - Class, category, subcategory, type
   - Label information
     - Symbol, signal word, hazard statement(s), precautionary statement(s))
   - Other hazards not classified

SDS Section 3 & 4 Information

3. Composition/information on ingredients

- For hazardous products that are a material or substance
  - Chemical name, common name/synonyms, CAS number, other unique identifiers, chemical names of impurities, stabilizers, or additives
- For materials or substances in a mixture that are classified as a health hazard
  - Chemical name, common name/synonyms, CAS number, other unique identifiers, concentration

4. First-aid measures

- Measures by exposure type
  - Inhalation, skin contact, eye contact, ingestion
- Vital symptoms and effects
- If medical attention or treatment is required

SDS Section 5 & 6 Information

5. Fire-fighting measures

- Suitable and unsuitable extinguishing media
- Hazards associated with the hazardous product in fire conditions
- Personal protective equipment and precautions for fire-fighters

6. Accidental release measures

- Personal protective equipment, precautions, and emergency procedures
- Containment method, including required materials
- Prescribed clean-up

SDS Section 7 & 8 Information

7. Handling and storage

- Information on safe handling
- Prescribed storage methods
  - Incompatible materials

8. Exposure controls/personal protection

- Occupational exposure information for chemical and biological exposures and appropriate control mechanisms
- Engineering controls
- Personal protective equipment recommendations

SDS Section 9 Information

9. Physical and chemical properties

- Not all may be applicable
  - Appearance (state of matter, color)
  - Odour
  - Odour threshold
  - pH
  - Melting/freezing point
  - Initial boiling point/boiling point range
  - Flash point
  - Evaporation rate
  - Flammability (solid, gas)
  - Lower flammable/explosive limit
  - Upper flammable/explosive limit
  - Vapour pressure
  - Vapour density
  - Relative density
  - Solubility
  - Partition coefficient
  - Auto-ignition temperature
  - Decomposition temperature
  - Viscosity

SDS Section 10 & 11 Information

10. Stability and reactivity

- Not all may be applicable
  - Reactivity
  - Stability
  - Possible hazardous reactions
  - Undesirable conditions that can impact material (ie. Shock, light)
  - Incompatible materials
  - Decomposition products

11. Toxicological information

- Description of toxic health effects and the data which verified these claims
  - Routes of exposure
  - Symptoms related to the toxic health effects
  - Delayed, immediate, and chronic effects from short- and long-term exposures
  - Values/measurements of toxicity

SDS Section 12 & 13 Information

12. Ecological information

- Information may not be on SDS
  - Ecotoxicity
  - Persistence and degradability
  - Bioaccumulation potential
  - Mobility in soil
  - Other adverse effects

13. Disposal considerations

- Information may not be on SDS
  - Safe handling for disposal
  - Methods for disposal, including contaminated packaging

SDS Section 14,15 & 16 Information

14. Transport information

- Information may not be on SDS
  - UN number
  - UN proper shipping name
  - Transport hazard class(es)
  - Packing group
  - Environmental hazards
  - Transport in bulk
  - Special precautions

15. Regulatory information

- Information may not be on SDS
  - Safety, health, and environmental regulations pertaining to the product

16. Other information

- Date of the latest revision of the SDS

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As a worker, when would I use an SDS?

- Always be familiar with the hazards of a product **before** you start using it. You should look at an SDS, match the name of the product on the container to the one on the SDS, know the hazards, understand safe handling and storage instructions, as well as understand what to do in an emergency.
- You can think of the SDS as having four main purposes. It provides information on:
  A. **Identification**: for the product and supplier.
  B. **Hazards:** physical (fire and reactivity) and health.
  C. **Prevention:** steps you can take to work safely, reduce or prevent exposure, or in an emergency.
  D. **Response**: appropriate responses in various situations (e.g., first-aid, fire, accidental release).

As a worker, when would I use an SDS? Cont.

- For most people who work with hazardous products, you should always:
  - read the name of the chemical (Section 1),
  - know the hazards (Section 2),
  - understand safe handling and storage instructions (Section 7), and
  - understand what to do in an emergency (Sections 4, 5 and 6).
- Ask your supervisor or a health and safety professional for advice if the way you use the product does not match the SDS.