

1. Safety In the Science Lab

A. Lab Safety Contract

B. WHMIS

- stands for the Workplace Hazardous Materials Information System
- it is a comprehensive system for providing health and safety information on hazardous products intended for use, handling, or storage in Canadian workplaces
- the main components of WHMIS are:
 - hazard identification and product classification
 - labelling
 - safety data sheets
 - education and training



















WHMIS Symbols and Pictograms

- WHMIS became law in 1988 & introduced distinctive symbols to identify hazardous materials.



- in 2015, WHMIS was updated to align with the worldwide hazard communication system known as the Globally Harmonized System of Classification and Labelling of Chemicals or (GHS)
- it was developed by the United Nations to replace an assortment of national hazard classification systems with one global set of rules for communicating hazard information
- the updated classifications, labels, and safety data sheets improve communication, clarity, and worker safety around the world
- there are now ten pictograms which are aligned with the GHS

WHMIS Chemical Hazards Pictograms 2015

WHMIS 1988 Hazard Class	WHMIS 1988 Symbols	WHMIS 2015 Symbols	WHMIS 2015 Hazard Class
A			Gases Under Pressure
B1 to B6			Flammables, Self-Heating, Emit Flammable Gases, Pyrophoric Gases, Liquids & Solids Organic Peroxides
C			Oxidizing Gases, Liquids, Solids
D1			Acute Toxicity - Oral, Dermal, Inhalation
D2			Eye Irritation, Skin Irritation Skin/Respiratory Sensitization, Carcinogenicity Mutagenicity Reproductive Hazards
D3			Biohazardous Infectious Materials
E			Skin/Eye Corrosion Corrosive to Metals
F			Self-Reactive Substances Organic Peroxides
N/A	N/A		Explosive Substances (Explosives are still covered under WHMIS exclusions for now)
N/A	N/A		Aspiration, STOT (Single Exposure, Repeated Exposure)
N/A	N/A	N/A	Combustible Dusts
N/A	N/A	N/A	Simple Asphyxiants
N/A	N/A	Use appropriate symbol	Physical Hazards Not Otherwise Classified, Health Hazards Not Otherwise Classified

Product Labelling

- product labels provides users with **concise** information about the hazards of the substance being used you use and how to **protect** yourself from those hazards, including **safe handling** and **emergency** measures.

The Basic Parts of A GHS-Compliant Label

1 → **n-Propyl Alcohol**
UN No. 1274
CAS No. 71-23-8

2 → **DANGER**

3 → Highly flammable liquid and vapor. Causes serious eye damage. May cause drowsiness and dizziness.

4 → Keep away from heat/sparks/open flames/hot surfaces. No smoking. Avoid breathing fumes/mist/vapours/spray. Wear protective gloves/protective clothing/eye protection/face protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present. Continue rinsing.

Fill Weight: 18.65 lbs. Lot Number: B56754434
Gross Weight: 20 lbs. Fill Date: 6/21/2013
Expiration Date: 6/21/2020 See SDS for further information.

5 → Acme Chemical Company • 711 Roadrunner St. • Chicago, IL 60601 USA • www.acmechem.com • 123-444-5567

6 →

1. **Product Identifier** - Should match the product identifier on the Safety Data Sheet.
2. **Signal Word** - Either use "Danger" (severe) or "Warning" (less severe)
3. **Hazard Statements** - A phrase assigned to a hazard class that describes the nature of the product's hazards
4. **Precautionary Statements** - Describes recommended measures to minimize or prevent adverse effects resulting from exposure.
5. **Supplier Identification** - The name, address and telephone number of the manufacturer or supplier.
6. **Pictograms** - Graphical symbols intended to convey specific hazard information visually.

Sample label courtesy of Weber Packaging Solutions • www.weberpackaging.com

What is a Safety Data Sheet (SDS)?

- SDSs are summary documents that provide information about the **hazards** of a product and **advice** about **safety** precautions
- SDSs provide **more detailed** hazard information about the product than the **label**
- tell users **what** the hazards of the product are, **how** to use the product safely, what to **expect** if the recommendations are **not followed**, how to **recognize** symptoms of exposure, and **what to do** if emergencies occur.

1. Safety In the Science Lab

C. Lab Safety Contract

D. WHMIS

- stands for the _____
- it is a comprehensive system for providing _____ information on _____ products intended for use, handling, or storage in Canadian workplaces
- the main components of WHMIS are:
 - Hazard _____ and product _____
 - _____
 - _____
 - _____

WHMIS Symbols and Pictograms

- WHMIS became law in 1988 & introduced distinctive symbols to identify hazardous materials.



Compressed Gas



Flammable



Oxidizer



Poisonous



Toxic



Biohazard





















Corrosive



Reactive

- in 2015, WHMIS was updated to align with the worldwide hazard communication system known as the _____
or _____
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- the updated classifications, labels, and safety data sheets improve communication, clarity, and worker safety around the world
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Product Labelling

- product labels provides users with _____ information about the hazards of the substance being used you use and how to _____ yourself from those hazards, including _____ and _____ measures.

The Basic Parts of A GHS-Compliant Label

The image shows a sample GHS-compliant label for n-Propyl Alcohol. The label is white with a black header for the product name. Below the name are the UN and CAS numbers. A large red diamond-shaped hazard pictogram is on the right, containing symbols for flammable liquid, health hazard, and a general hazard symbol. The label also includes a signal word 'DANGER', hazard statements, precautionary statements, and supplier information. Red arrows with numbers 1 through 6 point to specific parts of the label: 1 points to the product name, 2 to the signal word, 3 to the hazard statements, 4 to the precautionary statements, 5 to the supplier information, and 6 to the hazard pictogram.

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What is a Safety Data Sheet (SDS)?

- SDSs are summary documents that provide information about the _____ of a product and _____ about _____ precautions
- SDSs provide _____ hazard information about the product than the _____
- tell users _____ the hazards of the product are, _____ to use the product safely, what to _____ if the recommendations are _____, how to _____ symptoms of exposure, and _____ if emergencies occur