






## Introduction to WHMIS






### Collections Care for Historical Pharmaceutical Collections Resource Package March 2024

Canada has what is called the Workplace Hazardous Materials Information System (WHMIS). This information system is used to ensure that everyone potentially handling hazardous materials is aware of the risks and how best to keep themselves, others, and the environment safe. WHMIS is the Canadian version of a standardized global system; this means the system's name may change from place to place but the concepts will be the same.

There are two important components of WHMIS you should be aware of. The first is the hazard labelling on a substance itself. The second is the associated Safety Data Sheet.

Warnings about hazards are required to be printed on a substance's label. Any special hazards to be immediately aware of will be identified by a pictogram. Here is a guide to what these pictures mean:

	Substance is explosive and/or reactive
	Substance is flammable
	Substance is an oxidizer This means it makes other substances more flammable, including potentially causing spontaneous combustion (i.e. fire starts without a source of ignition) and/or makes flames bigger and hotter Essentially, these substances aren't dangerous in a vacuum but can make fires more likely and more dangerous when exposed to other substances
	Substance is or contains a gas under pressure. This means a release in pressure (e.g. a hole) may cause a reaction. It's a similar idea to shaking up a can of pop.
	Substance is corrosive. Substance causes damage to metals or to human tissue.

	Substance is dangerously toxic, quickly and in small quantities. I.e. Be very careful!
	Substance is a health hazard. Be very careful, but not quite as concerned as when you see the skull and crossbones.
	A general warning – substance can be harmful to living beings or the environment and should be handled cautiously, but is not hazardous enough to require specific warning.
	Don't let this substance get into the water system – it's environmentally damaging
	This substance is a biohazard and may infect living beings (human or animal) with disease

These symbols are a quick alert – they are designed to let the user know what they're dealing with at a glance. Once alerted, the label should be consulted for further information.

More in-depth information can be found on Safety Data Sheets (or Material Safety Data Sheets; these are the same thing). See **What Can I Learn From A Safety Data Sheet?** for more information on what these sheets contain.

### Relevance to Museums

Safety Data Sheets (SDS) should be available for any modern chemicals used at the museum (e.g. acetone for cleaning).

SDS can also be used to make educated guesses about handling older pharmaceuticals. While recipes and manufacturing techniques can change over time, a modern SDS may still flag potential hazards. You can usually find SDS through an internet search.

E.g. A SDS from 2023 states that ether is flammable, poisonous, and can cause dizziness by inhalation. These are also valid risks to be aware of when handling historical ether.

### Further WHMIS Training:

You may be able to request WHMIS training from your workplace or school; your workplace is required to train you in WHMIS if you are exposed to or using hazardous materials.

For your own general interest, the Canadian Centre for Occupational Health and Safety has [more information](#) about WHMIS, as well as paid training courses.

## What Can I Learn From A Safety Data Sheet?

**You should always consult the SDS before working with an unfamiliar chemical. Sometimes you need to respond too quickly to grab a reference sheet if something happens.**

### Introduction

- What is this used for?
- Who made it and how can I contact them?
- What's written on the label? (This can be useful if your label is damaged or missing)

### Composition and Toxicology

- What is it made of?
- How toxic is it?

### Fire and Explosion Data

- How flammable is it?
- How likely is it to combust or spontaneously ignite?
- What might trigger it to combust or ignite? (e.g. sparks, heat, other chemicals)
- How do I safely extinguish it?

### Hazards

- Is it corrosive?
- Is it an irritant?
- Is it poisonous?
- What can acute (i.e. short term) exposure cause?
- What are its chronic (i.e. long term) effects?

### First Aid Measures

- How do I treat someone who got it in their eyes?
- How do I treat someone who got it on their skin?
- How do I treat someone who breathed it in?
- How do I treat someone who ate or drank it?

### Accidental Release

- How do I handle an accidental spill?
- How do I safely clean up a spill?
- What are the risks to the environment of a spill?

### Handling and Storage

- How do I safely interact with it?
- How do I safely store it?

### Protective Equipment

- What should I wear when handling this material?
- What should I wear when cleaning up a spill?
- What's the exposure limit (i.e. at what concentration for what time span am I no longer safe interacting with it)?

**Stability and Reactivity**

- How stable is it?
- What other chemicals should I keep it away from?
- What should I avoid exposing it to? (e.g. it vaporizes in air, it reacts badly with plastic)
- Does it decompose into something dangerous?

**Physical and Chemical Properties**

- What does it look like?
- What does it smell like?
- What does it taste like?
- (This section can contain a lot of information, including melting point, freezing point, water solubility, etc. The information available will tend to vary by substance)

**Additional Information**

- What do I need to know that isn't covered by the above?

Some of the chemistry in a SDS can be hard to understand. However, sections related to safety (first aid, PPE, etc.) will be written in clear, plain language. You should never be afraid to consult the SDS for any substance. They are designed for everyone, not just for chemists.

**Citations**

"WHMIS - Pictograms." Canadian Centre for Occupational Health and Safety. February 2, 2024. [https://www.ccohs.ca/oshanswers/chemicals/whmis\\_ghs/pictograms.html](https://www.ccohs.ca/oshanswers/chemicals/whmis_ghs/pictograms.html).

Diethyl ether. SDS No. 296082 [Online]. Sigma Aldrich: Darmstadt, Germany, revised March 2023, <https://www.sigmaaldrich.com/US/en/sds/sial/296082>

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