WHMIS

Training Workbook

Adapted by Southern Health-Santé Sud from the LMS WHMIS 2015 Training Course and the WHMIS 1988 WHMIS 2015 Transition Book

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1. WHMIS INTRODUCTION

The overall purpose of WHMIS (Workplace Hazardous Materials Information System) is to help to ensure a safer, healthier workplace. WHMIS provides information to keep workers safe when working with hazardous materials. Hazardous materials can be chemical or biological hazards.

A Hazardous Material is a substance that has the potential to cause harm/ damage or adverse health effects to someone or something. Exposures to hazardous product(s) can cause or contribute to a variety of health effects such as irritation, burns, sensitization, organ toxicity and damage, and cancer. Some materials may also be physical safety hazards that can contribute to fires, explosions and other accidents if improperly stored or handled.

WHMIS education helps you to understand how WHMIS works. WHMIS training gives you hands-on-knowledge of how to work safely with specific products at your workplace.

Before working with any hazardous materials workers need to know the following:

- Where can I get information about this product?
- What are the hazards?
- How can I use it safely?
- What do I do if something goes wrong?

2. ELEMENTS OF WHMIS

WHMIS provides hazard information on hazardous materials and the required precautions and control measures to protect workers through

- **Education**
    - Training programs provide instruction on hazards (General WHMIS Education) and specific work procedures (Specific WHMIS Training).
    - **General WHMIS education** teaches about hazard classification, pictograms/ symbols, labels and SDSs, along with employee rights and responsibilities.
    - **Specific WHMIS training** is directly related to the employee's worksite, the job being performed and the hazardous product being worked with. The employer (supervisor) is responsible for providing training on how to use, handle, and store and dispose of these hazardous products safely.
- **Classification**
- **Labels**
    - Labels on hazardous materials containers are used to alert employers and employees to the dangers of products and basic safety precautions.

- **Safety Data Sheets (SDS)**
    - These documents are technical bulletins that provide detailed hazard and precautionary information on the product

3. WHMIS INFORMATION

3.1 Law

WHMIS first became law in 1988 and was aligned with the Global Harmonization System in 2015. WHMIS is now often referred to as WHMIS 2015.

3.2 Hazardous Products (Controlled) and Products not covered by WHMIS (Non controlled)

The term "Hazardous Product" has replaced the term "Controlled Product" in WHMIS 2015. This refers to a substance provided by a workplace supplier that has a hazard associated with it. The hazardous classification criteria are more complete and improves the ability to show the severity of hazards.

Some products are not covered under WHMIS 2015 and are referred to as "Non-Controlled" products.

The following types of products are not covered under WHMIS 2015:

- Explosives
- Cosmetics, devices, drugs, and foods
- Pest control products (pesticides)
- Consumer Products
- Wood and products made of wood
- Manufactures articles
- Tobacco and tobacco products
- Hazardous waste
- Nuclear (radioactive) substances

Many of these products are covered under other laws but be aware that most can still have a hazard associated with them.

Consumer products, for example, are used readily in the workplace and many have hazards associated with them (i.e. Bleach). If the consumer product has a hazard associated with it, it would fall under the WHMIS program. Please refer to page 15 for more information on consumer products.

4. WHMIS EDUCATION & TRAINING

WHMIS education and training is legally required for all employees who are exposed to a hazardous material at the workplace.

Employees have the right to know about:

- The hazards of chemical products in the workplace
- The measures in place to prevent employees from any adverse effects
- What to do in case of emergency (i.e. exposure/accidental spill)

The responsibility to ensure employees are trained and the manner in which training is conducted rests with the employer. The employer can designate the manager/ supervisor/ educator through policy and procedure.

5. ROLES, RESPONSIBILITIES AND DUTIES

Everyone has a role to play to ensure safety. Suppliers shall provide labels and SDSs to customers.

Employers shall ensure that:

- All hazardous products in the workplace are properly labeled
- SDS for hazardous products are up-to-date and readily available to employees
- Employees are provided with proper education and training
- Ensure appropriate control measures are in place to protect the health and safety of employees

Employees shall:

- Participate in WHMIS training programs
- Take necessary steps to protect themselves and other employees
- Participate in identifying and controlling hazards in the workplace

6. ROUTES OF ENTRY

The effects of hazardous materials vary with their route of entry into the body. A hazardous material may be harmful by one route and not by another.

6.1 Inhalation (breathing in)

- The most common route of entry because direct contact with the product is not required and many toxic substances are present in an airborne form
- Product is rapidly absorbed into the bloodstream through the lungs and can pose a poisoning danger
- Wear the appropriate respiratory protective equipment

6.2 Ingestion (swallowing)

- Not as common and often results due to poor hygiene practices
- This commonly occurs when hands are not washed before eating or drinking after using a product

6.3 Eye Contact

- The eyes rapidly absorb chemicals
- Wear the proper eye protection when dealing with chemicals to prevent accidental splashes into the eye

6.4 Skin Contact

- This occurs when a chemical comes directly in contact with the skin and may cause a burn or irritation

6.5 Skin Absorption

- Chemicals are rapidly absorbed by the skin
- For example, if someone is spraying a chemical on trees and is not wearing gloves, the chemical can absorb into the skin

6.6 Injection

- Direct entry, ex. Needle
- Taken into the body though broken skin

To minimize exposure to hazardous products, wear the appropriate personal protective equipment (PPE), as required. Always check with your Supervisor or the product's SDS to ensure that you have the right PPE.

7. WHMIS – CLASSIFICATION OF HAZARDS

WHMIS has established rules for suppliers to classify hazardous products based on their properties. Hazardous products are assigned to hazard groups and then into classes and categories. Hazardous products are divided into two hazard groups (Physical and Health Hazard). The two hazard groups are further divided into hazard classes. Hazard classes are a way of grouping together products that have similar properties. The hazard class identifies the property or nature of the hazard associated with the product. There are 19 physical hazard classes and 12 health hazard classes. Each hazard class contains at least one category.

7.1 Hazard Groups

The two (2) Hazard Groups for WHMIS are **Physical Hazards Group** and **Health Hazards Group**.

- Physical Hazards Group

Physical hazards are based on the physical or chemical properties of the product (for example, products that are flammable, reactive, or corrosive to metals) A product with known physical hazards can be dangerous because they could cause damage through fire or explosion. Examples of these products are flammables/ combustibles (acetone, alcohol, thinners, cleaners, and paints), oxidizers (hydrogen peroxides, disinfectant tablets, silver nitrate, and concentrated bleach) and compressed gases (oxygen, propane, and nitrogen).

- Health Hazards Group

Health hazards in this group are classified based on the ability of the product to cause adverse health effects. Health effects may vary from minor irritation like skin rash, to life- threatening disease such as cancer. Examples of a product's health effects are eye irritation, respiratory sensitization (difficulty in breathing, asthma or allergies), toxic effects following a single exposure (through skin or eye contact, inhalation, or swallowing of hazardous products), and carcinogenicity (repeated exposure to hazardous products may cause cancer).

7.2 Hazard Classes

Hazard classes are a way of grouping together products that have similar properties. There are 19 physical hazard classes and 12 health hazard classes.

Examples of Physical Hazard Classes

- Flammable gases
- Gases under pressure
- Oxidizing solids
- Corrosive to metals
- Flammable Liquids
- Flammable Solids
- Organic Peroxides
- Self-reactive substances and mixtures

Examples of Health Hazard Classes

They are hazardous products that cause:

- Acute Toxicity
- Skin corrosion/irritation
- Carcinogenicity
- Germ cell mutagenicity
- Reproductive toxicity
- Serious eye damage/eye irritation
- Respiratory of skin sensitization
- Specific target organ toxicity – single exposure

7.3 Hazard Category

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

Some hazard classes have only one category (for example, “Corrosive to metals”). Others may have two categories (for example, “Carcinogenicity” or three categories (for example, “Oxidizing liquids”).

7.4 WHMIS 2015 Pictograms

Pictograms are graphic images to show what type of hazard is present and have specific hazard classes or categories.

WHMIS Pictogram	Description	Precautions
	Environmental Hazard - Aquatic Toxicity • Canada did not adapt this pictogram into WHMIS but staff may see it on SDSs • For questions about disposal, contact your on-site disposal contact, your hazardous water disposal contractor, or your supervisor	• May cause damage to the Aquatic environment

WHMIS Pictogram	Description	Precautions
	Flame Over Circle – Oxidizing Materials • Physical Hazard – Oxidizing liquids, solids, bases • Increases the risk or intensity of a fire by providing available oxygen • The material is a fire or explosion risk near flammable or combustible material • May burn skin or eyes on contact	• Keep away from sources of ignition • Never smoke near it • Keep in a cool place • Wear eye or face shields, gloves or other protective clothing as required • Keep away from flammable & combustible material and away from sources of ignition
	Corrosion – Corrosive Materials • Health & Physical Hazard – corrosive to metals/ skin/ eyes/ lungs • The material causes sever eye and skin damage • May cause metal containers or structural materials to become weak and eventually to leak or collapse • Respiratory damage if inhaled	• Be aware that these can be found in household cleaning products • Avoid skin or eye contac • Use proper protective equipment • Wash immediately on contact • Store in designated areas
	Skull – Acute Toxicity • Health & Physical Hazard – Acute Toxicity (fatal or toxic) • The material is poisonous and my have immediate and serious effect • Can cause rapid or serious injury or death even in small amounts • It can be fatal if inhaled, ingested or absorbed • It may affect the eyes	• Handle with care • Avoid contact, use proper protective equipment • Use in well- ventilated area • Wash immediately on contact • Store in designated area

WHMIS Pictogram	Description	Precautions
	Exploding Bomb – Unstable/ Reactive • Physical Hazard – self – reactive substance/ mixture or Organic Peroxides (both severe) • The material is unstable • It undergoes vigorous chemical reactions • Shock, pressure or temperature changes may start chemical reactions	• Keep away from heat • Do not shake or jar, open carefully • Requires careful storage and handling • Store is a designated area
	Exclamation Mark - Health Hazard The material may: • Be a skin or eye irritant • Cause allergic skin reaction (skin sensitizer) • Has the potential to cause specific adverse health effects such as cancer, birth defects and respiratory sensitization • Has the potential to cause specific target organ toxicity – single exposure (Respiratory irritation, drowsiness or dizziness) • Could cause damage to the Ozone layer	• Handle with care • Avoid contact, use proper protective equipment • Use in well-ventilated area • Wash immediately on contact • Store in designated area
	Gas Cylinder – Compressed Gas • It is a gas under pressure • Heat may cause it to explode • A drop or impact may cause it to explode • Sudden release of contents could injure the skin or eyes • Some gases have very cold vapour that causes freeze burns on skin • The contents may be hazardous	• Handle with care • Store in a well ventilated designated area • Keep away from heat • Store and secure upright • DO NOT smoke around these contents • Refer to section 7.5 for information for staff that work with OXYGEN tanks

WHMIS Pictogram	Description	Precautions
	Flammable – Gases, Liquids, Solids • The material is a fire hazard • It may burn at low temperature • Sparks, flame or friction could ignite it • May burst into flame spontaneously • In contact with water, may emit flammable gas • Organic peroxides	• Keep away from heat sources • Never smoke near it • Avoid possibility of sparks in areas where it is stored • Store is a designated area • Keep away from oxidizers (flame over circle pictogram)
	Health Hazard • Carcinogenicity (cancer causing agent) • Respiratory sensitization • Reproductive toxicity (birth defects) • Breathing (aspiration hazard) • Specific target organ toxicity – single or repeated exposure	• Handle with care • Avoid contact, use proper protective equipment • Use in well ventilated area • Wash immediately after contact • Store in a designated area
	Biohazardous Infectious Material • Health Hazard • The material may cause disease • The material may contain poisonous toxins	• Handle with care – avoid contamination • Use in designated area • Use proper protective equipment • Wash hands • Follow policies and procedures in the infection control manual

7.5 Important Information for staff that work with oxygen tanks

- No smoking around oxygen - stay at least 15 feet away from the tank
- Know where full and empty oxygen tanks are stored
- Store upright or flat and do not let them roll around
- Always ensure there is adequate oxygen for patients during transport
- Notify maintenance to exchange oxygen tanks if empty
- Keep the tanks away from candles, stoves, open flames, etc.
- Do not store oxygen tanks neat heat or ignition sources
- Do not drape any over, or store anything on the oxygen tanks
- Fire extinguishers should be close by oxygen tanks (NOTE: oxygen itself is not flammable, but supports combustion)

8. WHMIS LABEL

The product label is the employee's first source of information about the hazards of a product and how to use it safely. Under WHMIS, hazardous products should always be labelled.

If you find a product where the label is missing, damaged or no longer readable, please bring it to the attention of your Manager/ Supervisor or WHMIS designate.

There are two main kinds of labels: Supplier Labels and Workplace Labels.

8.1 Supplier Labels

Supplier labels require pictograms, signal words, and standardized hazard statements and precautionary statements. A pictogram, signal word, and hazard statement are now assigned to most hazard classes and categories**.**

The supplier label must be bilingual (English/ French), easy to read, and durable.

The supplier label must include:

1. Product Identifier – name exactly as it appears on the container and SDS.

2. Hazard Pictograms – are determined by the hazard class. In some cases no pictogram is required.

3. Signal Word – "Danger" or "Warning" is used to emphasize hazards and their severity

4. Hazard Statements – brief standardized statements of all hazards based on the WHMIS hazard classification of the product.

5. Precautionary Statements – include what personal protective equipment is required, what emergency measures should be taken and what fire aid actions should be taken.

6. Supplier Identifier – the company which made or packaged the product, and is responsible for the label and SDS information.

8.2 Workplace Labels

The employer or employee produces workplace labels in the workplace in certain circumstances. Workplace labels may be used when:

- The supplier label is missing or illegible
- The contents were transferred from the original container to another container, in part or in full. (This is called decanting)
- A hazardous product is produced (made) at the workplace and used in that workplace
- Generating hazardous Waste

In these cases, workplace labels must be applied to the container prior to filling the container. Workplace labels require less information than supplier labels and do not have a prescribed format.

The following information must be included on a workplace label:

- Product Name matching the SDS product name
- Safe Handling precautions
- May include pictograms or other supplier label
- Reference to the SDS

8.3 Labeling in Laboratories

Hazardous Materials require a WHMIS label (Supplier or Workplace)

Non- Hazardous Material (e.g. waters, buffer, etc.) require an identifying label:

- This may be taped or marked with the name clearly identified on the container
- Some laboratories will complete workplace labels and place them on a sheet of paper. They would then place them with the non-hazardous materials so staff know they are non-hazardous material.
- Do not require a WHMIS label (Supplier or Workplace)

9. CONSUMER PRODUCTS

- Consumer products are generally used for personal, family and household purposes and are available to the public through the retail system. In the workplace, they are used extensively in home care, group homes, retirement homes and child care environments.
- Consumer products have their own unique labels. If further information is required, ask the manufacturer using the contact information that may be found on the consumer label or manufacturer's website.
- Labels on consumer products may display a border or shape that indicates the degree of risk and a symbol or pictogram inside the border that indicates the type of hazard. If the consumer label becomes illegible or if the product is decanted from the supplier container, a WHMIS workplace label must be affixed to the container. Employers must provide training to employees on how to handle, use, store and dispose of consumer products.

CONSUMER SYMBOLS

DEGREE OF HAZARD		TYPE OF HAZARD	
	**WARNING** Special hazard/ special requirements	Flammable 	• Fire hazard • Will ignite if exposed to a • spark or flame • Store away from heat • Use in a ventilated area
	**DANGER** Severe hazard/ immediate harm	Poison 	• Potentially fatal if inhaled or swallowed • May have serious long-term health effects • Wear gloves/face mask • Wash after using
	**CAUTION** Moderate hazard/long-term or hidden harm	Explosive 	• Handle container with care • May explode if heated or dropped • May react violently with other • materials
		Corrosive 	• Causes skin/eye burns • Do not breathe in fumes • Wear gloves and eye protection

10. SAFETY DATA SHEETS

A Safety Data Sheet (SDS) is a document that provides detailed and comprehensive information on hazardous products. The information is used to:

- identify the product and supplier
- identifies the hazards of the product
- to inform of the precautions to work safely with this material
- to inform of what do in the case of an emergency

Every product that is classified as a "hazardous product" under WHMIS that is intended for use, handling or storage in a workplace in Canada must have a Safety Data Sheet.

Employers will be required to make sure that all hazardous products (as defined by the Hazardous Products Regulations) have an accurate SDS at the time of sale. The SDS must be updated when the supplier becomes aware of any "significant new data". This definition means that an SDS must be updated when:

- There is new information that changes how the hazardous product is classified
- There are changes to how the product is handled or stored and the precautions for protection from overexposure.

WHMIS 2015 - Safety Data Sheet
The Safety Data sheet must be readily available to the employees who could potentially be exposed to the hazardous product, and to Health & Safety Committee or representative
Section 1: Identification Product identifier, recommended use and restrictions on use, supplier contact information, emergency phone number
Section 2: Hazard Identification Classification (hazard class and category), label elements (including pictogram, signal word, hazard statement and precautionary statements) and other hazards
Section 3: Composition / Ingredients Chemical name, synonyms, CAS No., hazardous ingredients that contribute to the classification of a hazardous material and associated health hazards
Section 4: First-aid measures Provides the first-aid measures by route of exposure as well as most important symptoms/ effects.
Section 5: Fire-fighting measures Provides information to assist with fire, explosion, procedures in the event of emergency. Includes suitable (and unsuitable) extinguishing media, specific hazards, special equipment and precautions for fire fighters

Section 6: Accident Release Measures Provides information on handling accident spills and leaks. Inlcudes information on protective equipment, emergency procedures, methods and materials for spill containment and clean up
Section 7: Handling and Storage Provides information on precautions for safe handling and conditions for storage including safe storage of the hazardous material.
Section 8: Exposure Controls/Personal Protection Provides information on measures to prevent workers from being overexposed; including exposure limits, engineering controls, personal protective equipment
Section 9: Physical and Chemical Properties Provides a physical description of the hazardous material that is useful for identification and to understand how the hazardous material responds to changes in the physical environment
Section 10: Stability and Reactivity Provides information on the stability of the hazardous material and its likelihood of dangerous reaction with other chemicals. These include chemical stability, conditions of instability, incompatible substances, reactivity, and hazardous decomposition products.
Section 11: Toxicological information Provides information on how the material is likely to enter the body (known as routes of entry). There is also information on the short term, long term and multiple health effects that are possible in the event of worker over-exposure. Included are the effects of short-term and long-term (acute and chronic) exposure, carcinogenicity, reproductive effects, and respiratory sensitization
Section 12: Ecological Information Provides information on how the hazardous material is likely to affect the environment. Included are aquatic and terrestrial toxicity (if available), persistence and degradability, bio- accumulative potential, and mobility in soil.
Section 13: Disposal Considerations Provides information on how to safely dispose of the hazardous material. Included are methods for safe handling of waste and disposal methods (including contaminated packaging instructions).
Section 14: Transport Information Provides information needed for the transportation of dangerous goods. Included are: UN number, proper shipping, name, hazard classes and packing group.
Section 15: Regulatory Information Contains information on safety, health and environmental regulations specific to the product
Section 16: Other Information Other information including the *date of the latest revision of the SDS*.

11. YOUR RESPONSIBILITIES

- Familiarize yourself with any hazardous materials such as chemicals or biological hazards that you may be using, or that others are using around you in your work area. Refer to the SDS, and be especially aware of the Personal Protective Equipment (PPE) required and fires aid measures
- Familiarize yourself with your department or office WHMIS inventory, SDS's and their location. You should be able to find a specific SDS in less than 1 minute
- If there are any hazardous materials in y our work area that do not have an SDS, bring it to the attention of your supervisor. Make sure all chemicals, including decanted products, have WHMIS labels.

Original content developed from the Provincial Workplace Safety and Health working group.