

Block A: Safety Related Functions



Plumbing Apprenticeship Program Level 1 Series

Block A: Safety Related Functions

BC Plumbing Apprenticeship, Level 1

SKILLEDTRADESBC

*BC PIPING ARTICULATION AND CURRICULUM SUBCOMMITTEE;
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Block A of the Plumbing Apprenticeship Program Level 1 Series features Skilled Trades BC industry-authority content on safety related functions in plumbing. Safety is a part of the job. When you take a job, you have a safety obligation to your employer, co-workers, family, and yourself. By recognizing and understanding the hazards in your work area, you can prevent the occurrence of many accidents. Most accidents are preventable. Both employees and employers must take responsibility for making the workplace safe.

Block A of the Plumbing Apprenticeship Program Level 1 Series focuses on the causes and results of workplace accidents, the short- and long-term hazards in the trades, general safety precautions and procedures, emergency equipment and facilities, how a workplace safety policy is established, lockout and tagout procedures, and ladder and scaffold usage.

Plumbing Apprenticeship Program Level 1 Series

The *Plumbing Apprenticeship Program Level 1 Series* offers comprehensive training materials designed to build on foundational skills and knowledge. The series is divided into four main blocks, each focusing on critical areas of plumbing systems and installations.

Block A: Safety Related Functions

(<https://a-safetyfunctions-bcplumbingapprli.pressbooks.tru.ca>)

A-1: Workplace Hazards

A-2: WorkSafeBC Regulations

A-3: Safe Handling of Hazardous Materials

A-4: Personal Safety Practices

A-5: Fire Safety

Block B: Tools and Equipment

(<https://b-handmeasuringtools-bcplumbingapprli.pressbooks.tru.ca>)

B-1: Use Hand Tools and Measuring Tools

B-2: Use Portable Power Tools and Use

B-3: Use Access Equipment

B-4: Use Rigging, Hoisting, Lifting and Positioning Equipment, and Rigging

B-5: Use Soldering and Brazing Equipment and Oxy-Fuel Cutting Equipment

B-6: Use Welding Equipment

Block C: Routine Trade Activities and Electrical Concepts

(<https://c-tradeactivities-electrical-bcplumbingapprli.pressbooks.tru.ca>)

C-1: Mathematics and Science

C-2: Electrical Concepts and Principles of Electricity
C-3: Drawings and Specifications
C-4: Codes, Regulations and Standards
C-5: Manufacturer and Supplier Documentation

Block D: Piping and Components

(<https://d-pipingcomponents-bcplumbingappri1.pressbooks.tru.ca>)

D-1: Install Pipe and Tubing
D-2: Install Valves
D-3: Install Fittings
D-4: Penetrate Structures

Plumbing Apprenticeship Program Overview and Upcoming Resources

- **Plumbing Apprenticeship Program Level 1 Series** (<https://openpress.trubox.ca/2024/12/13/plumbing-apprentice-level-1/>) can be found in the TRU Open Press Collection.
- **Plumbing Apprenticeship Program Level 2 Series** (<https://openpress.trubox.ca/2024/04/26/bc-plumbing-apprenticeship-level-2/>) can be found in the TRU Open Press Collection.
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- **Plumbing Apprenticeship Program Level 4 Series** (<https://bccampus.ca/projects/archives/zed-cred-z-degrees/ztc-open-educational-resources-for-trades/>) can be found in the BCCampus Open Collection. (<https://collection.bccampus.ca/>) (Block F: Commission and Service will be available soon.)

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Safety Advisory

The current Standards and Regulation in BC can be obtained at the WorkSafeBC website: <http://www.worksafebc.com> (<http://www.worksafebc.com>)

Please note that it is always the responsibility of any person using these materials to inform themselves about the Occupational Health and Safety Regulation pertaining to their areas of work.

Symbol Legend



Important Information



Potentially Toxic/ Poisonous Situation



Required or Optional Resources



Potentially Flammable Situation



Complete a Self-Test



Possibly Explosive Situation



Use Protective Equipment



Potential Electric Shock

Acknowledgements

The development of the *Plumbing Apprenticeship Level 1* learning resources was a collaborative effort driven by a commitment to excellence in trades education. These resources were created to support apprentices and journeypersons in mastering the skills and knowledge essential to the piping trades. This achievement would not have been possible without the dedication and expertise of *Skilled Trades BC* and the *Piping Trades Articulation Committee*, whose contributions, leadership, and guidance have been instrumental in shaping high-quality, industry-aligned training resources. We extend our sincere gratitude for their contributions and ongoing stewardship in advancing the piping trades.

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- Line A: Safe Work Practices: Competency A-1: Control Workplace Hazards (<https://collection.bccampus.ca/resource/tQtm8KNK>)
- Line A: Safe Work Practices: Competency A-2: Describe WorkSafeBC Regulations (<https://collection.bccampus.ca/resource/4x48JUbq>)
- Line A: Safe Work Practices: Competency A-3: Handle Hazardous Materials Safely (<https://collection.bccampus.ca/resource/PMfB6kHM>)
- Line A: Safe Work Practices: Competency A-4: Describe Personal Safety Practices (<https://collection.bccampus.ca/resource/xQpDrgQM>)
- Line A: Safe Work Practices: Competency A-5: Describe Fire Safety (<https://collection.bccampus.ca/resource/VPwUd4rq>)

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Resources

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- Trades Training BC

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To order printed copies of Program Outlines or learning resources (where available) for BC Trades, contact:

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Starting December 1, 2022, Industry Training Authority was officially renamed to SkilledTradesBC. Hear more in this video from SkilledTradesBC CEO, Shelley Gray, on what this means for the trades industry and British Columbians. Closed captioning and transcripts are available with this video, Introducing Skilled Trades BC (<https://www.youtube.com/watch?v=OQgwdP0rNog>) (2022) on YouTube.



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References

- Camosun College. (n.d.). *Line A: Safe work practices*. BCcampus. <https://collection.bccampus.ca/textbook/tQtm8KNK/>
- SkilledTradesBC. (2025). Plumber program outline (Implementation date: August 18, 2025; Last revised: December 16, 2025) [PDF]. Province of British Columbia. <https://skilledtradesbc.ca/media/2776/download>
- SkilledTradesBC. (2022, December 1). Introducing Skilled Trades BC. YouTube. <https://www.youtube.com/watch?v=OQgwdP0rNog>

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Font	Font size can be zoomed to 200% in the webbook or eBook formats.	Yes

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A-3 SAFE HANDLING OF HAZARDOUS MATERIALS

Plumber Apprenticeship Program – Level 1



Person Wearing White Suit Holding White Container (Pixabay/Pexels) CC0 (<https://creativecommons.org/public-domain/cc0/>)

A-3 Safe Handling of Hazardous Materials

Introduction

Workers exposed to hazardous materials may face serious health risks, such as kidney or lung damage, sterility, cancer, allergic reactions or burns. Some hazardous materials can also cause fires or explosions.

Legislation and regulations are in place to reduce injuries and diseases caused by exposure to hazardous materials used in the workplace.

Everyone who works with or near hazardous products has the right to know what the hazards are and how to use these products safely.

Learning Objectives

When you have completed this section, you should be able to:

- Describe Workplace Hazardous Materials Information System (WHMIS) regulations and the handling of hazardous goods.
- Identify the hazards associated with hazardous products.
- Select the appropriate personal protective clothing and equipment to protect yourself when working with hazardous materials.



You will be required to reference publications and videos available online at WorkSafeBC. (<https://www.worksafebc.com/en>)

Terminology

The following terms will be used throughout this section. A complete list of terms for this section can be found in the **Glossary**.

- **corrosive:** Something that can **burn, eat away, or damage** materials like skin, eyes, or metal. Corrosive substances can cause serious injuries if they touch your body, so they must be handled very carefully. (Section A-3.5)
- **excluded** (from both federal and provincial WHMIS legislation): In WHMIS, a product or situation that is not covered by certain federal or provincial WHMIS rules. Even when a product is excluded, workers must still be told about any health or safety risks and how to use the product safely. (Section A-3.3)
- **Globally Harmonized System of Classification and Labelling of Chemicals (GHS):** An international system that uses the same symbols, labels, and safety information to explain the dangers of chemicals and how to use them safely. (Section A-3.1)
- **[hazard] categories (also called types):** A classification that shows how dangerous a hazard is. Lower numbers or earlier letters usually mean more danger. (Section A-3.1)
- **hazard classes:** A group that shows the type of danger a product has, such as fire or health risks. (Section A-3.1)
- **hazardous product:** A substance that can harm people or cause damage if it is not used safely. (Section A-3.1)
- **health hazard:** Examples include: overexposure to harmful dusts, chemicals, or radiation. (Section A-1.1 and Section A-3.1)
- **label:** A safety tag or sticker on a product container that shows hazards, symbols, and basic safety information. (Section A-3.2)
- **physical hazard:** Examples: moving objects, fluctuating temperatures, high-intensity lighting, rolling or pinching hazards, electrical connections, and sharp edges (Section A-1.1 and Section A-3.1).
- **pictogram:** A symbol that quickly shows what kind of hazard a product has; used on safety labels in WHMIS. (Section A-3.1)
- **safety data sheet (SDS):** Documents that explain the hazards of a product and give important information on how to use, store, and handle it safely, and what to do in an emergency. (Section A-3.1 and Section A-3.2)
- **supplier label:** The label placed on a product by the supplier that shows hazards and safe handling information. (Section A-3.1)
- **Transportation of Dangerous Goods (Regulations):** A Canadian system that uses special labels and colours to warn people about dangerous materials being moved from one place to another. Some colours, like orange, are already used by TDG to show specific dangers (such as explosives), so those colours cannot be used for other safety labels because they could confuse. (Section A-3.3)
- **Workplace Hazardous Materials Information System (WHMIS):** A safety system that helps workers understand the dangers of hazardous products and how to use them safely at work. (Section A-3.2)
- **workplace label:** A safety label added by the employer at the workplace. They are used when a product is transferred to another container or when the original supplier label is missing, and they explain the hazards and safe handling of the product. (Section A-3.3)

A-3.1 Explain the Hazardous Products Legislation

Working with chemicals and other hazardous materials is a normal part of many jobs in the piping trades. To keep workers safe, the Government of Canada and WorkSafeBC have established laws that control how hazardous products are classified, labelled, and used in the workplace. These laws make sure that everyone—from suppliers and employers to workers—has the information needed to handle materials safely and prevent exposure or injury.

The most important concept to remember about handling hazardous material is that you are responsible for your own safety and the safety of others.

Purpose of WHMIS

The Workplace Hazardous Materials Information System (WHMIS) (<https://www.canada.ca/en/health-canada/services/environmental-workplace-health/occupational-health-safety/workplace-hazardous-materials-information-system.html>) is Canada's national hazard communication standard. The overall purpose of WHMIS is to help ensure a safer, healthier workplace. WHMIS is also known as the *Right to Know* requirement. Your knowledge about the workplace is your biggest asset in successfully understanding and benefiting from WHMIS.

Legislation

WHMIS is implemented through a combination of federal and provincial legislation. The main purpose of the **federal** WHMIS legislation is to require the suppliers of hazardous materials used in the workplace to provide health and safety information about their products as a condition of sale. The main purpose of the **provincial** WHMIS legislation is to require employers to obtain health and safety information about hazardous materials in the workplace and to pass this information on to workers.

There are a number of pieces of federal legislation that implement WHMIS:

- The **Hazardous Products Act** (<https://laws-lois.justice.gc.ca/eng/acts/h-3/>) places duties on suppliers to provide up-to-date labels and **safety data sheets (SDSs)** to their customers.
- The **Hazardous Products Regulation** (<https://laws-lois.justice.gc.ca/eng/regulations/sor-2015-17/index.html>), established January 30, 2015, under the amended Hazardous Products Act, defines what a hazardous product is and sets the classifications, labelling, and required information to be found on SDSs. This regulation has replaced the previous Controlled Products Regulations (CPR) and the Ingredient Disclosure List.
- The **Hazardous Materials Information Review Act** (<https://laws-lois.justice.gc.ca/eng/acts/h-2.7/index.html>) establishes the Hazardous Materials Information Review Commission, which is the federal agency that rules on claims for exemption from disclosing confidential business information. This Act also defines the type of information a supplier or employer may withhold from a label or SDS.
- The **Hazardous Materials Information Review Regulations** (<https://laws-lois.justice.gc.ca/eng/regulations/sor-88-456/>) set out the criteria that the commission uses when assessing the validity of a claim for exemption. They also set out the fees for filing a claim for exemption or appealing a decision of the commission.

Globally Harmonized System

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS) (<https://www.canada.ca/en/health-canada/services/environmental-workplace-health/occupational-health-safety/workplace-hazardous-materials-information-system/globally-harmonized-classification-labelling-chemicals.html>) is an internationally agreed-upon system, created by the United Nations. It was designed to replace the various chemical classification and labelling standards used in different countries by using consistent criteria for hazard classification and labelling at a global level. Its development began at the United Nations Rio Conference in 1992.

Before GHS, countries—and even regions within the same country—used different systems for classifying and labelling chemical products. This situation created confusion for workers who needed to understand chemical hazards in order to work safely. It was also costly for companies required to comply with multiple systems and challenging and expensive for governments to regulate and enforce. The goal of GHS is to establish one common set of rules for classifying hazards and a consistent format and content for labels and safety data sheets (SDSs) will be adopted worldwide.

In December 2011, the Joint Action Plan for the Canada-U.S. Regulatory Cooperation Council (RCC) was announced. It included a key commitment to “align and synchronize implementation of common classification and labelling requirements for workplace hazardous chemicals” within the mandates of the U.S. Occupational Safety and Health Administration (US-OSHA) and Health Canada.

In Canada, on June 19, 2014, legislative amendments to the Hazardous Products Act (HPA), along with related amendments to other federal acts, including the Hazardous Materials Information Review Act, received Royal Assent. As a result, Health Canada repealed and replaced the Controlled Products Regulations (CPR) with the Hazardous Products Regulations (HPR) to implement GHS. These federal changes also led to updates to provincial and territorial occupational health and safety legislation and regulations.

WHMIS was first introduced in 1988 through a coordinated set of federal, provincial, and territorial laws and regulations. Adopting GHS did not change the basic roles and responsibilities of suppliers, employers, and workers under WHMIS. Instead, GHS elements were incorporated into the existing system, introducing standardized hazard classifications, label requirements, and SDS formats, and aligning WHMIS with the Joint Action Plan commitments.

For the sake of clarity, the original WHMIS is now referred to as WHMIS 1988, and the updated version is called WHMIS 2015. The transition from WHMIS 1988 to WHMIS 2015 was completed in December 2018. During the transition period, workers may have encountered both systems. For more detailed information, refer to the Canadian Center for Occupational Health and Safety (CCOHS): WHMIS (https://www.ccohs.ca/oshanswers/chemicals/whmis_ghs/general.html) website.

Hazardous Products

WHMIS defines a **hazardous product** as a product that poses a **physical hazard** or **health hazard** and meets the criteria for inclusion in one or more of the 31 **hazard classes**. Some hazard classes are further divided into **categories** (also called types), which show how severe the hazard is. Product suppliers classify hazardous products and assign one or more appropriate **pictograms** (symbols) that must appear on the **supplier label**.

WHMIS provides information about many hazardous materials used in the workplace, known as hazardous products. Under WHMIS, workers have the right to receive information about each hazardous product they use, including its

identity, hazards, and safety precautions. This information helps reduce exposure to hazardous materials and supports safe work practices.

Products Not Covered by WHMIS

Some hazardous products are covered by other legislation and therefore are either exempt or excluded from WHMIS requirements. They will have labelling and hazard information meeting their legislative requirements. The products excluded from WHMIS are:

- Explosives (as defined in the Explosives Act (<https://laws-lois.justice.gc.ca/eng/acts/e-17/>))
- Cosmetics, devices, drugs, or foods (as defined in the Food and Drugs Act (<https://laws-lois.justice.gc.ca/eng/acts/f-27/>))
- Pest control products (as defined in the Pest Control Products Act (<https://laws-lois.justice.gc.ca/eng/acts/p-9.01/>))
- Consumer products (as defined in the Canada Consumer Product Safety Act (<https://laws-lois.justice.gc.ca/eng/acts/c-1.68/>))
- Wood or products made of wood
- Nuclear substances, within the meaning of the Nuclear Safety and Control Act (<https://laws-lois.justice.gc.ca/eng/acts/n-28.3/>), that are radioactive
- Hazardous waste (being a hazardous product that is sold for recycling or recovery and is intended for disposal)
- Tobacco and tobacco products (as defined in the Tobacco and Vaping Products Act (<https://laws-lois.justice.gc.ca/eng/acts/t-11.5/>))
- Manufactured articles

Recognition of Rights and Responsibilities

WHMIS specifies the duties for suppliers, employers and workers (Table 1):

Table 1: WHMIS Rights and Responsibilities

Group	Responsibilities	Key Duties
Suppliers	Suppliers of hazardous products must ensure products are properly classified and provide up-to-date SDSs for all hazardous products they sell or produce. If new significant data becomes available about a product, the supplier must provide an updated SDS within 90 days of becoming aware of the changes. Suppliers must also provide supplier labels on all containers of hazardous products they sell or produce.	• Ensure hazardous products are properly classified • Provide up-to-date Safety Data Sheets (SDSs) for all hazardous products sold or produced • Update SDSs within 90 days if new important information becomes available • Provide supplier labels on all containers of hazardous products
Workers	Workers must know and understand the information on all labels and SDSs. They must use the information they receive through education and training to handle hazardous products safely.	• Understand the information on labels and SDSs • Use training and SDS information to handle hazardous products safely
Employers	Employers must ensure that there is an up-to-date SDS for each hazardous product supplied to the workplace. Copies of supplier and employer SDSs must be accessible to employees. The sheets must be placed close to work areas and made available during each work shift. Workers must be taught what to look for in a data sheet, and they must be given an opportunity to become familiar with the information the sheets carry. Employers are responsible for workplace labels when required. While some products, covered by other legislation, may be exempt from all of the WHMIS requirements, employers must still provide education and training on the health effects, safe use, and storage of these products.	• Ensure an up-to-date SDS is available for each hazardous product in the workplace • Make SDSs accessible to workers during every work shift and near work areas • Train workers on how to read and use SDSs • Provide workplace labels when required • Provide education and training for products exempt from WHMIS but still hazardous
Regulators (WorkSafeBC)	WorkSafeBC staff administer WHMIS legislation. This includes providing general information about WHMIS to employers and workers as well as ensuring compliance with both federal and provincial WHMIS legislation.	• Administer and enforce WHMIS legislation • Provide information and guidance to employers and workers • Ensure compliance with federal and provincial WHMIS requirements

Hazardous Product Classifications

There are two groups of hazardous products: those posing physical hazards and those posing health hazards. The products within these two hazard groups are further divided into hazard classes. A hazardous product may fall into more than one hazard class.

Physical Hazards

The physical hazards group includes the following hazard classes:

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

Note: Explosives are not included in WHMIS 2015 because they are covered by other legislation.

Health Hazards

The health hazards group includes the following hazard classes:

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

Note: An environmental hazards group exists in GHS. This group (and its classes) was not adopted in WHMIS 2015 since it is beyond the direct scope of WHMIS legislation (i.e., workplaces). However, you may see the environmental classes listed on labels and SDSs.

Hazard Categories

Each hazard class is divided into categories or types that show how dangerous the hazard is. Categories are identified by numbers (1, 2, 3, etc.), and types are identified by letters (A, B, C, etc.). In general, lower numbers and earlier letters mean a greater hazard or danger. For example, a Category 1 oxidizing liquid is more dangerous than a Category 2 oxidizing liquid. If a category is further divided into subcategories, such as 1A and 1B, then 1A represents the higher level of hazard.

Note: There are some exceptions to this system. For the “gases under pressure” hazard class, categories such as “compressed gas,” “liquefied gas,” “refrigerated liquefied gas,” and “dissolved gas” describe the physical form of the gas when packaged, not how severe the hazard is.



Self-Test A-3.1: Explain the Hazardous Products Legislation

Complete Self-Test A-3.1 and check your answers.

If you are using a printed copy, please find Self-Test A-3.1 and Answer Key at the end of this section. If you prefer, you can scan the QR code with your digital device to go directly to the interactive Self-Test.



An interactive H5P element has been excluded from this version of the text. You can view it online here:
<https://a-safetyfunctions-bcplumbingapprl1.pressbooks.tru.ca/?p=1225#h5p-17> (<https://a-safetyfunctions-bcplumbingapprl1.pressbooks.tru.ca/?p=1225#h5p-17>)

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A-3.2 Describe the Key Elements of WHMIS

The **Workplace Hazardous Materials Information System (WHMIS)** is designed to ensure that everyone in the workplace has the information they need to work safely with hazardous products. It provides a consistent system for classifying hazards and sharing safety information with workers through labels, safety data sheets (SDS), and education.

After a hazardous product has been classified, three WHMIS elements are used to communicate health and safety information:

1. Labelling
2. Safety data sheets (SDS)
3. Education and training

Labelling

When a supplier produces or imports a hazardous product for distribution and sale in Canada, the supplier must prepare a **label** that is clearly and prominently displayed on the container. These labels are often the first warning to users about the major hazards of the product. They also outline basic safety precautions that should be followed. The label shown in Figure 1 is an example of an acceptable supplier label from CCOHS (n.d).

1 Product K1 / Produit K1	
2  	
3 Danger Fatal if swallowed. Causes skin irritation.	4 Danger Mortel en cas d'ingestion. Provoque une irritation cutanée.
5 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.	6 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.
ABC Chemical Co., 123 rue Anywhere St., Mytown, ON NON ONO (123) 456-7890	

Figure 1 Supplier label sample from CCOHS (n.d.). 1) Product Identifier, 2) Hazard Pictograms, 3) Signal Word, 4) Hazard Statements, 5) Precautionary Statements, and 6) Supplier Identifier. (Used with permission of CCOHS (<https://www.ccohs.ca/products/posters/WHMIS-labels>))

Safety Data Sheets

MATERIAL SAFETY DATA SHEET			
ADDRESS: Heat and Light Resources d/b/a HeatCell PO Box 1033 Jane Lew, WV 26378 (304) 326-2624		DATE: 01/02/00 PREPARED BY: Dr. Charles Simon	MSHA HAZARD CLASSIFICATIONS H = HEALTH F = FLAMMABILITY R = REACTIVITY NF = NOT FOUND H = 1 F = 1 R = 1
I. IDENTIFICATION LABEL NAME: FOOD WARMER TRADE OR PRODUCT NAME: EcoFuel™ XB/HeatCell FDGNO.: CAS NO. Diethylene Glycol CAS 00111-46-6		EMERGENCY TELEPHONE NUMBER: CHEMTREC 800-424-9300	
II. FIRE, EXPLOSION AND REACTIVITY DATA FLASH POINT (METHOD): 246°F (104°C) Cleveland Open Cup EXTINGUISHING MEDIA: DRY CHEMICAL, FOAM OR CO ₂ SPECIAL FIRE FIGHTING PROCEDURES: NONE UNUSUAL FIRE AND EXPLOSION HAZARDS: UNKNOWN. Believed to be relatively safe.			
HAZARDOUS COMBUSTIBLE OR DECOMPOSITION PRODUCTS: Product consists of hydrocarbon component stabilized by tightly packed fiber wool to give an essentially non-spillable mass. The components are contained in a metal can with a metal lid. The mass is not ignitable at room temperature. To ignite, apply flame directly to glass fiber(s). Can produce carbon monoxide and some irritants under some burning conditions. Glass fibers caused cancer in animals through unnatural routes of exposure (surgical implantation), but it is not associated with cancer by inhalation. Use of glass fibers has not been shown to cause cancer in humans. If ingestion of glass fibers occur, observe individual for several days to ensure that intestinal blockage does not occur. It is not recommended to induce vomiting if ingested. STABILITY: Stable CONDITIONS TO AVOID: Excessive Heat. MATERIALS TO AVOID: Strong Oxidizers HAZARDOUS POLYMERIZATION PRODUCTS: NA Will not occur.			
III. PHYSICAL DATA ODOR, APPEARANCE AND PHYSICAL STATE: Slightly opaque colorless liquid with subtle petroleum solvent odor. BOILING POINT: 433°F 223°C MELTING POINT: NA VAPOR PRESSURE (mmHg) < 1 @ 20°C, DEG = 0.01 VAPOR DENSITY (AIR = 1): > 1			
SPECIFIC GRAVITY (4/4 = 1.0): 1.117 @ 68°F (20°C) EVAPORATION RATE: < 1 (Butyl Acetate = 1) SOLUBILITY IN WATER: Partially Miscible			
IV. PROTECTION INFORMATION RESPIRATORY: Use NIOSH or NIOSH respirator for handling vapor or mist. VENTILATION: Always use with Good ventilation. EYE: Safety glasses for working with vapors or mists. SKIN: Protective gloves or clothing generally not needed. OTHER PROTECTIVE DEVICES AND PROCEDURES: Generally not required. Avoid prolonged breathing of mist. Wash hands after handling. Wash soiled work clothing frequently.			
V. OCCUPATIONAL EXPOSURE LIMIT THRESHOLD LIMIT VALUE (TLV): NF OSHA PERMISSIBLE EXPOSURE LIMIT (PEL): NF HAS THE SUBSTANCE BEEN LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN IN THE ANNUAL REPORT ON CARCINOGENS PUBLISHED BY IARC BY THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR BY OSHA? YES ☐ NO ☒			

Figure 2 Safety Data Sheet (Sid/Flickr) CC BY-NC-ND 2.0
(<https://creativecommons.org/licenses/by-nc-nd/2.0/deed.en>)

A **safety data sheet (SDS)** is a technical bulletin that provides specific, detailed information about a product, including its hazards, safe handling instructions, and emergency procedures. Since SDSs contain specific health and safety information for each hazardous product, they should be used as a key source of information for developing training programs and safe work procedures. SDSs are also valuable reference tools for workers, health and safety committees, and emergency service responders and personnel.

For more information, see WHMIS – Safety Data Sheet (SDS) (https://www.ccohs.ca/oshanswers/chemicals/whmis_ghs/sds.html) on the CCOHS website.

Education and Training

Employers must provide education and training for workers so that they can work safely with, or near, hazardous

products. Workers need to know how WHMIS works, the dangers of hazardous products in their workplace, and the procedures they must follow to work safely with the products.



Figure 3 WHMIS information flow (BC Industry Training Authority, 2019). CC BY-NC-SA 4.0 (<https://creativecommons.org/licenses/by-nc-sa/4.0/>)

Workers should be able to answer these questions for every hazardous product they use:

- What are the hazards of the product?
- How do I protect myself from those hazards?
- What do I do in case of an emergency?
- Where can I find more information?



Self-Test A-3.2: Describe the Key Elements of WHMIS

Complete Self-Test A-3.2 and check your answers.

If you are using a printed copy, please find Self-Test A-3.2 and Answer Key at the end of this section. If you prefer, you can scan the QR code with your digital device to go directly to the interactive Self-Test.



An interactive H5P element has been excluded from this version of the text. You can view it online here:
<https://a-safetyfunctions-bcplumbingapprl1.pressbooks.tru.ca/?p=1227#h5p-18> (<https://a-safetyfunctions-bcplumbingapprl1.pressbooks.tru.ca/?p=1227#h5p-18>)

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- **Figure 1** Supplier label from CCOHS: WHMIS – Labels (https://www.ccohs.ca/oshanswers/chemicals/whmis_ghs/labels.html) is used with permission.
- **Figure 2** Safety Data Sheet (<https://www.flickr.com/photos/sidknee23/3279840851/>) by sid [sidknee23] on Flickr is used under a CC BY-NC-ND 2.0 (<https://creativecommons.org/licenses/by-nc-nd/2.0/deed.en>) license.

A-3.3 Describe the Labelling of Controlled Products

WHMIS Labels

1 Product Identifier

The product name exactly as it appears on the container and on the Safety Data Sheet (SDS).

2 Hazard Pictograms

Hazard pictograms, determined by the hazard classification of the product. In some cases, no pictogram is required.

3 Signal Words

"Danger" or "Warning" are used to emphasize hazards and indicate the severity of the hazard.

4 Hazard Statements

Brief standardized statements of all hazards based on the hazard classification of the product.

5 Precautionary Statements

These statements describe recommended measures to minimize or prevent adverse effects from exposure to the product, including protective equipment and emergency measures.

6 Supplemental information (if required)

May be required based on classification. This information must not contradict or detract from the standardized information.

7 Supplier Identifier

The company which made, packaged, sold or imported the product, and is responsible for the label and SDS.

8 Safe Handling Precautions

May include pictograms or other supplier label information.

9 Reference to SDS

If available.

Supplier Label

(must be provided in English and French)

1 Product K1 / Produit K1



3 Danger | Danger

4 Fatal if swallowed. Causes skin irritation. Mortel en cas d'ingestion. Provoque une irritation cutanée.

5 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.

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 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.

6 5% of the mixture consists of an ingredient or ingredients of unknown acute toxicity. 5% du mélange consiste en ingrédients de toxicité aiguë inconnue.

7 Company XYZ, 123 Machin St, Mytown, ON N0N 0N0 (123) 456-7890

Workplace Label*

1 Product K1

8 Danger

Fatal if swallowed. Causes skin irritation. Wear protective gloves (necoprene). Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product.

9 See SDS for more information.

1 Produit K1

8 Danger

Mortel en cas d'ingestion. Provoque une irritation cutanée. Porter des gants de protection (polychloroprène). Se laver les mains soigneusement après manipulation. Ne pas manger, boire ou fumer en manipulant ce produit.

9 Pour de plus amples renseignements, consulter la FDS.

*Requirements may vary - consult your local jurisdiction for their requirements.

Canada



CCOHS.ca
Canadian Centre for Occupational Health and Safety

WHMIS 2015 labels (Used with permission of CCOHS (<https://www.ccohs.ca/products/posters/WHMIS-labels>))

Two types of labels are required by WHMIS: **supplier labels** and **workplace labels**. In general, suppliers are responsible for providing supplier labels and employers are responsible for providing workplace labels or other means of on-site identification. Employers must also ensure that all labels at their workplace are legible and that they are replaced if damaged.

Supplier Labels

When a supplier produces or imports a product for distribution and sale in Canada, that supplier must prepare a supplier label. Seven items of information must be included within the label border:

1. **Product identification:** Often the brand name, chemical name, trade name, common name, or generic name of the hazardous product.
2. **Initial supplier identifier:** The name, address, and phone number of the supplier (manufacturer, distributor, or importer).
3. **Hazard pictogram(s):** One or more of the nine graphic images indicating the type of hazard(s) the product presents.
4. **Signal words:** “Danger” is used for high-risk hazards; “Warning” is used for less-severe hazards. If a signal word is assigned to a hazard class and category, only the one signal word corresponding to the class of the most severe hazard should be used on a label. Some hazard classes or categories do not have a signal word assigned to them.
5. **Hazard statement(s):** Standardized phrases assigned to each hazard class and category that alert workers to the specific hazard(s) of the product. These are short statements, but they describe the most significant hazards of the product.

Some examples of hazard statements are:

- Extremely flammable gas.
- Contains gas under pressure; may explode if heated.
- Fatal if inhaled.
- Causes eye irritation.
- May cause cancer.

6. **Precautionary statement(s):** Standardized phrases that describe measures to be taken to minimize or prevent adverse effects resulting from exposure to the product or improper handling or storage. These statements can include instructions about storage, handling, first aid, personal protective equipment, and emergency measures. Examples of precautionary statements are:

- Keep container tightly closed.
- Wear protective gloves/protective clothing/eye protection/face protection.
- If exposed or concerned: Get medical advice/attention.
- Fight fire remotely due to the risk of explosion.
- Protect from sunlight.

7. **Supplemental label information:** May include supplemental information about precautionary actions, physical state, or routes of exposure. Also, if the product is a mixture that contains any ingredients with unknown toxicity in amounts higher than 1 percent, the label must include a statement indicating the percentage of unknown ingredient.

See the example of a supplier label in Figure 1.



Figure 1 Example of a supplier label (Health Canada, n.d.). Government of Canada Terms (<https://www.canada.ca/en/transparency/terms.html>).

Additional requirements for supplier labels include:

- Only the above seven information items can be printed within the WHMIS label. Other information, such as directions for use, must be placed outside the WHMIS label.
- The written information must be shown in both English and French.
- The information must be correct and current. Labels need to be updated within 180 days of the supplier being aware of any significant new data. If an employer purchases a product within this 180-day time period, the supplier must inform the employer in writing, of the changes and the date they became available. Employers need to update the existing labels or the information on the containers as soon as the supplier provides the significant new information.
- Colours that conflict with **transportation of dangerous goods (TDG)** labelling cannot be used. For example, the colour orange cannot be used because it is used by TDG to identify explosives.
- The label must stand out from the container itself and other markings on the container. For example, the size of the label should be appropriate for the size of the container.

As long as a hazardous product remains in its supplier-provided container, the supplier label must remain attached to the container and must be legible.

Other Supplier Labels

Some supplier labels may look different from the example shown in Figure 1 because less information is required for controlled products that are:

- In small containers (less than 100 mL)
- Chemicals from laboratory chemical suppliers
- Laboratory samples
- Contained or transferred in a piping system, vessel, or tank

The Transportation of Dangerous Goods Act may require additional labels during transport. For multi-container shipments, a supplier label is not required on the outer container if a TDG label is present. Only the inner containers require supplier labels.

Workplace labels

Workplace labels are required on containers of hazardous products for any of the following situations:

- A hazardous product is produced and used on-site
- On secondary containers after a product has been transferred from the original container
- On containers where the supplier label is missing or not readable.

Workplace labels provide three types of information:

1. Product identifier
2. Specific safe handling information and personal protective clothing and equipment required
3. Reference to the SDS, if an SDS has been produced by the supplier

The format for workplace labels is fairly flexible. For example:

- The information can be written directly onto the container using a permanent marker.
- The languages used can be chosen to fit the specific workplace.
- The hazard pictograms are optional.

Figure 2 shows an example of a workplace label.



Figure 2 Workplace label (BC Industry Training Authority, 2019). CC BY-NC-SA 4.0 (<https://creativecommons.org/licenses/by-nc-sa/4.0/>)

Other Means of Identification

In some circumstances where workplace labels are impractical, employers may use other means of identification such as warning signs, symbols, placards, and coding systems (for example, using colours, numbers or letters). These can be used as long as the identification system is communicated effectively and understood by workers.

These other means of identification can be used when the product is:

- Used in a laboratory (for example, in transfer containers such as beakers and flasks)
- Transferred by a worker into a container for use during the same shift if that worker maintains control of the new container and finishes use in that shift
- Contained in a transfer or reaction system such as a pipe, reaction vessel, tank car or conveyor belt
- Identified as a hazardous waste produced in the workplace

Partially Exempt Products

Products covered by other federal legislation are exempt from federal WHMIS requirements for supplier labels and SDSs. However, provincial WHMIS legislation still applies, and employers must:

- Provide workers with hazard information about the product
- Educate workers about the hazards of the product
- Educate and train workers in the safe use, handling, storage, and disposal of the product

These partially exempt products are:

- Some consumer products, such as chemicals and pressurized containers
- Cosmetics, medical devices, drugs and foods (Food and Drugs Act)
- Explosives (Explosives Act)
- Pesticides (Pest Control Products Act)
- Radioactive substances (Nuclear Safety and Control Act)

Completely Exempt Products

Products that are completely exempt (sometimes called **excluded**) from both federal and provincial WHMIS legislation are still covered by general provincial occupational health and safety regulations. Workers must still be trained and supervised in the safe handling of these products.

These completely exempt products are:

- Wood and products made of wood
- Manufactured articles (such as appliances and car batteries)
- Tobacco and products made of tobacco
- Goods handled, offered for transport, or transported under the Transportation of Dangerous Goods Act
- Hazardous wastes (they must be identified at workplaces where they are produced)



Self-Test A-3.3: Describe the Labelling of Controlled Products

Complete Self-Test A-3.3 and check your answers.

If you are using a printed copy, please find Self-Test A-3.3 and Answer Key at the end of this section. If you prefer, you can scan the QR code with your digital device to go directly to the interactive Self-Test.





An interactive H5P element has been excluded from this version of the text. You can view it online here:
<https://a-safetyfunctions-bcplumbingappr1.pressbooks.tru.ca/?p=1229#h5p-19> (<https://a-safetyfunctions-bcplumbingappr1.pressbooks.tru.ca/?p=1229#h5p-19>)

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- Figure 7. Example of a label which meets the HPR requirements (<https://www.canada.ca/en/health-canada/services/environmental-workplace-health/occupational-health-safety/workplace-hazardous-materials-information-system/supplier-hazard-communication-requirements-whmis/guidance.html#a6>):~:text=Figure%207.%20Example%20of%20a%20label%20which%20meets%20the%20HPR%20requirements) in *Guidance on the WHMIS supplier requirements* (Health Canada, n.d.) is used in compliance with the terms (<https://www.canada.ca/en/transparency/terms.html>) on the Government of Canada website.
- WHMIS labels** (<https://www.ccohs.ca/products/posters/WHMIS-labels>) posters downloaded from the CCOHS (2024) WHMIS Pictograms Kit (<https://www.ccohs.ca/WHMISpictograms.html>) (downloads) page is used with permission and under the CCOHS terms for educational purposes.

A-3.4 Describe Information to be Disclosed on a Safety Data Sheet (SDS)

A safety data sheet (SDS) is a technical bulletin created by the producer of a hazardous product. An SDS provides specific hazard information, safe handling information, and emergency procedures for a single hazardous product. The SDS is a key part of the WHMIS program as it provides informational support to workers when working with or around a hazardous product.

Since the SDS contains detailed health and safety information specific to each hazardous product, it should be used as a key source of information for developing training programs and safe work procedures. Workers must be trained to understand the basic requirements of an SDS as well as the applicable information in it.

In addition to providing adequate education, employers are responsible for making SDSs available, accurate and up-to-date for all workers at all times. Employers must ensure that up-to-date SDSs are received for all hazardous products purchased. No SDS on site can be more than three years old unless the employer has written confirmation from the supplier that the SDS hasn't changed.

If the employer produces a hazardous product for use at the workplace, the employer must develop an SDS for that product and make it available to workers. Copies of supplier and employer SDSs must be readily accessible to employees during each work shift.

SDS Sections



*Taking notes (Designed by Freepik) Freepik Terms of Use
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The following are the 16 section headings within an SDS and the types of information to be provided in each section.

Note: Example images are excerpts from an SDS for chromium (III) acetate hydroxide, from EHSADMIN on Wikimedia Commons (CC BY-SA 3.0 (<https://creativecommons.org/licenses/by-sa/3.0/>)). See Appendix A for the full SDS.

Note: Sections 12 to 15 require the headings to be present, but under Canadian regulations, the supplier has the option to not provide information in these sections.

Section 1: Identification

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	: Chromium(III) acetate hydroxide	
Product Number	: 318108	
Brand	: Aldrich	
Product Use	: For laboratory research purposes.	
Supplier	: Sigma-Aldrich Canada, Ltd 2149 Winston Park Drive OAKVILLE ON L6H 6J8 CANADA	Manufacturer : Sigma-Aldrich Corporation 3050 Spruce St. St. Louis, Missouri 63103 USA
Telephone	: +19058299500	
Fax	: +19058299292	
Emergency Phone # (For both supplier and manufacturer)	: 1-800-424-9300	
Preparation Information	: Sigma-Aldrich Corporation Product Safety - Americas Region 1-800-521-8956	

This section identifies the product, the manufacturer and the supplier, and it describes the intended product use. It also provides information about where to contact the manufacturer and supplier for information and/or in case of emergency.

Section 2: Hazard Identification



Hazard (Cler-Free-Vector-Images/
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license-summary/](https://pixabay.com/service/license-summary/))

2. HAZARDS IDENTIFICATION

Emergency Overview

WHMIS Classification

Not WHMIS controlled.

Not WHMIS controlled.

GHS Classification

Acute toxicity, Inhalation (Category 4)

Acute toxicity, Dermal (Category 4)

Acute toxicity, Oral (Category 4)

Skin irritation (Category 2)

Eye irritation (Category 2A)

Specific target organ toxicity - single exposure (Category 3)

GHS Label elements, including precautionary statements

Pictogram



Signal word

Warning

Hazard statement(s)

H302 + H312

Harmful if swallowed or in contact with skin.

H315

Causes skin irritation.

H319

Causes serious eye irritation.

H332

Harmful if inhaled.

H335

May cause respiratory irritation.

Precautionary statement(s)

P261

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

P264

Wash skin thoroughly after handling.

P270

Do not eat, drink or smoke when using this product.

P271

Use only outdoors or in a well-ventilated area.

P280

Wear protective gloves/ eye protection/ face protection.

P301 + P312

IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.

P302 + P352

IF ON SKIN: Wash with plenty of soap and water.

P304 + P340

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P312

Call a POISON CENTER or doctor/ physician if you feel unwell.

P322

Specific measures (see supplemental first aid instructions on this label).

P330

Rinse mouth.

P332 + P313

If skin irritation occurs: Get medical advice/ attention.

P337 + P313

If eye irritation persists: Get medical advice/ attention.

P362

Take off contaminated clothing and wash before reuse.

P403 + P233

Store in a well-ventilated place. Keep container tightly closed.

P405

Store locked up.

P501

Dispose of contents/ container to an approved waste disposal plant.

HMIS Classification

Health hazard:

0

Flammability:

0

Physical hazards:

0

Potential Health Effects

Inhalation

May be harmful if inhaled. May cause respiratory tract irritation.

Skin

May be harmful if absorbed through skin. May cause skin irritation.

Eyes

May cause eye irritation.

Ingestion

May be harmful if swallowed.

This section lists the classification of the hazardous product, hazard pictogram, signal word, hazard statement and precautionary statements for each category or subcategory applicable, as well as other hazards known to the supplier with respect to the product.

Section 3: Composition/Information on Ingredients

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : $C_{14}H_{23}Cr_3O_{16}$
Molecular Weight : 603.31 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Chromium(III) acetate hydroxide			
39430-51-8	254-447-3	-	-

This section contains general information on physical and chemical properties such as the chemical name, common name and synonyms, CAS registry number, and any unique identifiers, mixture concentrations, or stabilizing additives.

Section 4: First-Aid Measures



First Aid (Cler-Free-Vector-Images/
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license-summary/](https://pixabay.com/service/license-summary/))

4. FIRST AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

This section lists specific instructions for the immediate treatment of a worker who has inhaled or swallowed the product or who has had skin or eye contact with the product.

Section 5: Firefighting Measures

5. FIRE-FIGHTING MEASURES

Conditions of flammability

Not flammable or combustible.

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Chromium oxides

Explosion data - sensitivity to mechanical impact

no data available

Explosion data - sensitivity to static discharge

no data available

This section lists the information for developing strategies and procedures to deal with fire hazards.

Section 6: Accidental Release Measures



Protective equipment (David/Pixabay)
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6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions

Do not let product enter drains.

Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

This section includes information on required protective equipment, as well as on how to safely clean up and contain spills.

Section 7: Handling and Storage

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

Keep in a dry place.

This section includes information on how to safely handle and store the product.

Section 8: Exposure Controls/Personal Protection

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection

For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Specific engineering controls

Use mechanical exhaust or laboratory fumehood to avoid exposure.

This section includes information on how to control exposure as well as exposure limit values.

Section 9: Physical and Chemical Properties



Chemicals (Satheesh Sankaran/Pixabay)
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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	powder
Colour	green

Safety data

pH	no data available
Melting/freezing point	no data available
Boiling point	no data available
Flash point	no data available
Ignition temperature	no data available
Autoignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	no data available
Density	no data available
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available
Relative vapour density	no data available
Odour	no data available
Odour Threshold	no data available
Evaporation rate	no data available

This section includes information on all of the physical and chemical properties of the hazardous product.

Section 10: Stability and Reactivity Data

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

no data available

Conditions to avoid

no data available

Materials to avoid

Strong oxidizing agents

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Chromium oxides

This section lists conditions and other substances that should be avoided to prevent dangerous reactions.

Section II: Toxicological Information

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50

no data available

Inhalation LC50

Dermal LD50

Other information on acute toxicity

no data available

Skin corrosion/irritation

no data available

Serious eye damage/eye irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Reproductive toxicity

no data available

Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)

Inhalation - May cause respiratory irritation.

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

no data available

Aspiration hazard

no data available

Potential health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects

no data available

Additional Information

RTECS: Not available

This section identifies how the substance enters the body and the possible health effects from single or repeated

exposure. It also identifies if the product has any known long-term health effects such as liver or kidney damage, sensitization, cancer, or reproductive effects.

Section 12: Ecological Information

12. ECOLOGICAL INFORMATION

Toxicity

no data available

Persistence and degradability

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

PBT and vPvB assessment

no data available

Other adverse effects

no data available

This section identifies what short- or long-term effects the substance could have on the environment.

Section 13: Disposal Considerations



Disposal (OpenIcons/Pixabay) Content
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13. DISPOSAL CONSIDERATIONS

Product

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product.

This section includes information on the safe handling and disposal methods, including any containment packaging required.

Section 14: Transport Information

14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

This section includes all of the necessary international shipping information.

Section 15: Regulatory Information

15. REGULATORY INFORMATION

DSL Status

This product contains the following components listed on the Canadian NDSL list. All other components are on the Canadian DSL list.

Chromium(III) acetate hydroxide

CAS-No.
39430-51-8

WHMIS Classification

Not WHMIS controlled.

Not WHMIS controlled.

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.

This section includes any safety, health and environmental regulations that have been made specific to this product.

Section 16: Other Information



More information (mcmurryjulie/
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16. OTHER INFORMATION

Further information

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This section includes the date of the latest revision of the safety data sheet along with any other copyright information, legal disclaimer and additional terms or conditions for the sale of the product.

Appendix A shows the complete sample SDS for chromium acetate hydroxide.



Self-Test A-3.4: Describe Information to be Disclosed on an SDS

Complete Self-Test A-3.4 and check your answers.

If you are using a printed copy, please find Self-Test A-3.4 and Answer Key at the end of this section. If you prefer, you can scan the QR code with your digital device to go directly to the interactive Self-Test.



An interactive H5P element has been excluded from this version of the text. You can view it online here:
<https://a-safetyfunctions-bcplumbingapprl1.pressbooks.tru.ca/?p=1231#h5p-20> (<https://a-safetyfunctions-bcplumbingapprl1.pressbooks.tru.ca/?p=1231#h5p-20>)

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- Camosun College. (2015). *Trades Access Common Core Competency A-3: Handle Hazardous Materials Safely*. Victoria, B.C.: Crown Publications. Download for free from the B.C. Open Textbook Collection (<https://open.bccampus.ca/browse-ourcollection/find-open-textbooks/>).

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A-3.5 Identify Pictograms Found on WHMIS Labels



WHMIS Pictograms

Workplace Hazardous Materials Information System

Flame

- Aerosols
- Chemicals Under Pressure (flammable)
- Flammable
- In Contact with Water, Emits Flammable Gases
- Organic Peroxide
- Pyrophoric
- Self-Heating
- Self-Reactive

Flame over Circle

- Oxidizer

Exploding Bomb

- Explosive*
- Organic Peroxide (severe)
- Self-Reactive (severe)

Gas Cylinder

- Chemicals Under Pressure
- Gas Under Pressure

Corrosion

- Serious Eye Damage
- Skin Corrosion
- Corrosive to Metals

Exclamation Mark

- Acute Toxicity (harmful)
- Irritation (skin or eyes)
- Skin Sensitization
- Specific Target Organ Toxicity (drowsiness or dizziness, or respiratory irritation)
- Hazardous to the Ozone Layer*

Environment

- Aquatic Toxicity*

Skull and Crossbones

- Acute Toxicity (fatal or toxic)

Biohazardous

- Biohazardous Infectious Materials

Health Hazard

- Aspiration Hazard
- Carcinogenicity
- Germ Cell Mutagenicity
- Reproductive Toxicity
- Respiratory Sensitization
- Specific Target Organ Toxicity



A pictogram appropriate for the hazard

Physical Hazards Not Otherwise Classified

Health Hazards Not Otherwise Classified

No pictogram is assigned to some hazard classes, for example, Combustible Dusts and Simple Asphyxiants, and some less severe hazard categories. Chemicals Under Pressure, Categories 1 and 2 must be represented by both a flame and a gas cylinder pictogram. Self-reactive substances and mixtures (Type B) and Organic peroxides (Type B) must be represented by both a flame and an exploding bomb pictogram.

*Not required by WHMIS, but may be used.







Canadian Centre for Occupational Health and Safety

WHMIS 2015 classes and symbols (Used with permission of CCOHS (<https://www.ccohs.ca/products/posters/WHMIS-labels>))

Pictograms are graphic images that immediately show you what type of hazard a hazardous product presents.

Manufacturers and suppliers classify the products into one or more of the hazard classes and assign one or more of the appropriate pictograms. Pictograms will be on the product supplier labels of the hazardous products as well as on the SDSs.

Workers must recognize the ten hazard pictograms and know what they mean. Most pictograms have a distinctive red border in the shape of a square set on one of its corners. Inside this border is a symbol that represents the potential hazard (e.g., fire hazard, health hazard, **corrosive**, etc.). With a quick glance, a worker can see, for example, that the product is flammable or if it might be a health hazard.

Hazard Classes, Categories and Pictograms

Table 1 shows each hazard pictogram, its name, hazard description, and the associated hazard classes and categories.

Table 1. Hazard symbols

Name/ Description	Pictogram	Classes and categories
Flame (for fire hazards)		• Flammable gases (Category 1) • Flammable aerosols (Category 1 and 2) • Flammable liquids (Category 1, 2, and 3) • Flammable solids (Category 1 and 2) • Pyrophoric liquids (Category 1) • Pyrophoric solids (Category 1) • Pyrophoric gases (Category 1) • Self-heating substances and mixtures (Category 1 and 2) • Substances and mixtures which, in contact with water, emit flammable gases (Category 1, 2, and 3) • Self-reactive substances and mixtures (Types B*, C, D, E, and F) • Organic peroxides (Types B*, C, D, E, and F)
Flame over circle (for oxidizing hazards)		• Oxidizing gases (Category 1) • Oxidizing liquids (Category 1, 2, and 3) • Oxidizing solids (Category 1, 2, and 3)
Exploding bomb (for explosion or reactivity hazards)		• Self-reactive substances and mixtures (Types A and B*) • Organic peroxides (Types A and B*)
Corrosion (for corrosive damage to metals, as well as skin, eyes)		• Corrosive to metals (Category 1) • Skin corrosion/irritation –Skin corrosion (Category 1, 1A, 1B, and 1C) • Serious eye damage/eye irritation—Serious eye damage (Category 1)
Gas cylinder (for gases under pressure)		• Gases under pressure (compressed gas, liquefied gas, refrigerated liquefied gas, and dissolved gas)

Skull and crossbones (can cause death or toxicity with short exposure to small amounts)		- Acute toxicity - Oral (Category 1, 2 and 3) - Dermal (Category 1, 2, and 3) - Inhalation (Category 1, 2, and 3)
Exclamation mark (may cause less serious health effects or damage the ozone layer)		- Acute toxicity—Oral, dermal, inhalation (Category 4) - Skin corrosion/irritation—Skin irritation (Category 2) - Serious eye damage/eye irritation—Eye irritation (Category 2 and 2A) - Respiratory or skin sensitization—Skin sensitizer (Category 1, 1A and 1B) - Specific target organ toxicity—Single exposure (Category 3)
Health hazard (may cause or suspected of causing serious health effects)		- Respiratory or skin sensitization—Respiratory sensitizer (Category 1, 1A, and 1B) - Germ cell mutagenicity (Category 1, 1A, 1B, and 2) - Carcinogenicity (Category 1, 1A, 1B, and 2) - Reproductive toxicity (Category 1, 1A, 1B, and 2) - Specific target organ toxicity—Single exposure (Category 1 and 2) - Specific target organ toxicity—Repeated exposure (Category 1 and 2) - Aspiration hazard (Category 1)
Biohazardous infectious materials (for organisms or toxins that can cause diseases in people or animals)		Biohazardous infectious materials (Category 1)

Note: **Both the flame and explosive pictograms are used for self-reactive substances and mixtures (Type B) and organic peroxides (Type B).*

An environmental hazards group exists in the GHS for products that may cause damage to the aquatic environment. This group (and its classes) were not adopted in WHMIS 2015. However, you may see the environmental pictogram (Figure 1) listed on labels and SDSs.



Figure 1 Environmental hazard pictogram

Hazard Classes and Categories Without Pictograms

There are hazardous products that meet the criteria for a hazard class or category but whose classes and categories do not require a pictogram. The product label and Section 2 (Hazards Identification) of the SDS still require the signal word, hazard statement(s), and other required label elements.

WHMIS 2015 classes and categories that do not require a pictogram are:

- Flammable gases—Category 2
- Flammable liquids—Category 4
- Self-reactive substances and mixtures—Type G
- Organic peroxides—Type G
- Combustible dusts—Category 1
- Simple asphyxiants—Category 1
- Serious eye damage/eye irritation—Eye irritation—Category 2B
- Reproductive toxicity—Effects on or via lactation



Self-Test A-3.5: Identify Pictograms Found on WHMIS Labels

Complete Self-Test A-3.5 and check your answers.

If you are using a printed copy, please find Self-Test A-3.5 and Answer Key at the end of this section. If you prefer, you can scan the QR code with your digital device to go directly to the interactive Self-Test.



An interactive H5P element has been excluded from this version of the text. You can view it online here:
<https://a-safetyfunctions-bcplumbingapprl1.pressbooks.tru.ca/?p=1233#h5p-21> (<https://a-safetyfunctions-bcplumbingapprl1.pressbooks.tru.ca/?p=1233#h5p-21>)

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- Canadian Centre for Occupational Health and Safety (CCOHS). (2024). *WHMIS pictograms*. Free, downloadable WHMIS pictograms as regulated by the Hazardous Products Regulations. Retrieved from <https://www.ccohs.ca/WHMISpictograms.html>

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- **WHMIS pictograms (<https://www.ccohs.ca/WHMISpictograms.html>), pictogram poster (<https://www.ccohs.ca/products/posters/WHMIS-pictograms>) and WHMIS labels (<https://www.ccohs.ca/products/posters/WHMIS-labels>)** posters downloaded from the CCOHS (2024) WHMIS Pictograms Kit (<https://www.ccohs.ca/WHMISpictograms.html>) (downloads) page are used with permission and under the CCOHS terms for educational purposes.

A-3.6 Explain WHMIS Education and Training

The third component of WHMIS is worker education and training. The information provided by labels and SDSs will be of little use unless workers can understand it and apply it through training.

Employer Responsibilities

Employers are required to provide a training program that ensures workers understand WHMIS and the hazards associated with the hazardous products they use or may be exposed to in their workplace.

Education programs about WHMIS must be followed up with job-specific training in safe work procedures for handling, storing, and disposing of hazardous products. Worker representatives or the health and safety committee must be consulted in developing, implementing, and reviewing education and training programs.

Difference Between Education and Training

WHMIS education explains how WHMIS works, what an SDS is, what information is on a WHMIS label, and other information about WHMIS. WHMIS training refers to hands-on, job-specific training. Training shows individuals how to work safely with the hazardous products in a particular workplace.

Education

Worker education must include instruction in the content, purpose, and significance of workplace and supplier labels and SDSs. Workers can be educated through classroom instruction or by using videos or computer programs. Education courses can be offered on-site by employers, through contracted specialized companies, or through continuing studies at a local training facility. WHMIS education can also be completed and tested online.

Certification

Some industries, such as construction, offer WHMIS “cards” or “certificates” to participants who complete their WHMIS education program. Such cards and certificates are useful for workers who move regularly from site to site, enabling them to prove to new employers that they have attended WHMIS education sessions. However, job-specific training at each work site is still required for all workers who work with or near hazardous products.

Job-Specific Training

Employees must be trained in the procedures specific to their workplace. These include:

- Which hazardous products workers could be exposed to in their workplace
- How to store, handle, use, or dispose of hazardous products
- Emergency procedures in the event of an accident or spill

Implementing WHMIS in the Workplace

To implement the WHMIS program and develop written safe work procedures, employers make use of supplier labels and SDSs, as well as their own knowledge of the hazardous properties of products and their use in the workplace. The following sections outline the main hazards associated with products in the two hazard groups.

Hazardous Properties for the Physical Hazard Classes

This list shows the main concerns for the 18 hazard classes found in the **physical** hazard grouping.

Table 1. Hazardous Properties for the Physical Hazard Classes

Hazard Class	Hazardous Properties
Flammable gases Flammable aerosols Flammable liquids Flammable solids	These classes of products have the ability to ignite (catch fire) easily. The main hazards are fire or explosion.
Oxidizing gases Oxidizing liquids Oxidizing solids	These classes of products are oxidizers, which may cause or intensify a fire or cause an explosion.
Gases under pressure	- This class includes compressed gases, liquefied gases, dissolved gases, and refrigerated liquefied gases. - Compressed gases, liquefied gases, and dissolved gases are hazardous because of the high pressure inside the cylinder or container. The cylinder or container may explode if heated. Refrigerated liquefied gases are very cold and can cause severe cold (cryogenic) burns or injury.
Self-reactive substances and mixtures	These products may react on their own to cause a fire or explosion, or may cause a fire or explosion if heated.
Pyrophoric liquids Pyrophoric solids Pyrophoric gases	These products can catch fire very quickly (spontaneously) if exposed to air.
Self-heating substances and mixtures	These products may catch fire if exposed to air. These products differ from pyrophoric liquids or solids in that they ignite only after a longer period of time or when present in large amounts.
Organic peroxides	These products may cause a fire or explosion if heated.
Corrosive to metals	These products may chemically damage or destroy metals.
Combustible dust	This class is used to warn of products that are finely divided solid particles. If dispersed in air, the particles may catch fire or explode if ignited.
Simple asphyxiants	These products are gases that may displace oxygen in air and cause rapid suffocation.
Physical hazards not otherwise classified	This class covers physical hazards that are not included in any other physical hazard class. These hazards occur as a result of a chemical reaction and may result in serious injury or death at the time the reaction occurs. If a product is classified in this class, the hazard statement on the label and SDS will describe the nature of the hazard.

Hazardous Properties for the Health Hazard Classes

This list shows the main concerns for the 12 hazard classes found in the **health** hazard grouping.

Table 2. Hazardous Properties for the Health Hazard Classes

Hazard Class	Hazardous Properties
Acute toxicity	- These products are fatal, toxic, or harmful if inhaled, following skin contact, or if swallowed. - Acute toxicity refers to effects occurring following skin contact or ingestion from a single dose, or multiple doses given within 24 hours, or an inhalation exposure of up to four hours. - Acute toxicity may result from exposure to the product itself or from a product that releases a toxic gas when it comes into contact with water.
Skin corrosion/irritation	Products in this class cause severe skin burns (corrosion) and/or skin irritation.
Serious eye damage/eye irritation	Products in this class cause serious eye damage (i.e., corrosion) and/or eye irritation.
Respiratory or skin sensitization	A respiratory sensitizer is a product that may cause allergy or asthma symptoms or breathing difficulties if inhaled. A skin sensitizer is a product that may cause an allergic skin reaction.
Germ cell mutagenicity	This class includes products that may cause or are suspected of causing genetic defects (permanent changes (mutations) to body cells that can be passed on to future generations.
Carcinogenicity	This class includes products that may cause or are suspected of causing cancer.
Reproductive toxicity	This class includes products that may damage or are suspected of damaging fertility or the unborn child (baby). Note: There is an additional category that includes products that may cause harm to breast-fed children.
Specific target organ toxicity— single exposure	- This class covers products that cause or may cause damage to organs (e.g., liver, kidneys, or blood) following a single exposure. - This class also includes a category for products that cause respiratory irritation, drowsiness, or dizziness.
Specific target organ toxicity— repeated exposure	This class covers products that cause or may cause damage to organs (e.g., liver, kidneys, or blood) following prolonged or repeated exposure.
Aspiration hazard	This class is for products that may be fatal if they are swallowed and enter the airways.
Biohazardous infectious materials	These materials are microorganisms, nucleic acids or proteins that cause or are probable cause of infection, with or without toxicity, in humans or animals.
Health hazards not otherwise classified	This class covers products that are not included in any other health hazard class. These hazards have the characteristic of occurring following acute or repeated exposure and have an adverse effect on the health of a person exposed to it—including an injury or resulting in the death of that person. If a product is classified in this class, the hazard statement will describe the nature of the hazard.

Written Safe Work Procedures

Employers are required to write safe work procedures as safety guidelines for workers who will handle hazardous products. Safe work procedures address the specific hazards of the hazardous product and how it is safely used in the workplace. The written procedure must contain enough detail to provide clear direction to authorized workers.

The following steps outline the written safe work procedure to be used by authorized workers for clean-up of small spills of acetone (about one litre) for a particular work site.

Safe Work Procedure for Clean-Up of Acetone Spills

1. Extinguish and control all ignition sources, including electrical services, open flames, and electrostatic discharge.
2. Evacuate workers to the designated safe location.
3. Report the spill to your supervisor.
4. Get the waste containers and spill cart.
5. Put on the respirator, butyl rubber gloves, and safety goggles.
6. Clean up the acetone using chemical absorbent pillows from the spill cart according to the manufacturer's instructions.
7. Do not flush or rinse the spilled acetone into the sewer system.
8. Place used absorbent pillows (containing acetone) in designated waste containers.
9. Dispose of used chemical absorbent pillows according to local waste disposal procedures.

General Precautions When Using Common Hazardous Materials

Employers should take note of the following general precautions:

- Some common materials are considered safe to use under normal operation but may change to hazardous materials under certain conditions. These include fresh concrete, pressure-treated wood, contact cement, paints, and cleaners.
- Some substances are flammable as well as toxic. Use products such as contact cement and certain paints that are highly flammable in well-ventilated work areas that contain no open flame.
- Many substances are harmless by themselves, but when combined, they release toxic fumes. Two common household cleaning agents, ammonia and bleach, when mixed together will produce toxic chlorine gas. It is best not to mix any chemicals found on the job site unless you are absolutely certain that the combined mixture will not be harmful.
- Sometimes chemical changes are triggered by heat or radiation. The ultraviolet radiation from a welding operation can transform the vapours of many common solvents into the deadly gas phosgene. Many plastics and vinyl resins are harmless in their normal state but give off a highly toxic smoke when burned.
- Many paints and cleaners come in aerosol cans that use pressure to release their contents. These cans should not be kept near heat or exposed to flames. Empty cans should be disposed of properly, never burned. The containers are explosive and the residual contents are often highly flammable.
- Charges for powder-actuated tools are often used in shops and on construction sites, and are potentially dangerous. These products are supplied in plastic strips or plastic boxes. Live charges that are dropped on the floor or strips discarded with live charges in them can be dangerous. If sweepings and garbage are burned on the

site, the charges will explode when heated, which could injure anyone near the fire.

Read WHMIS 2015: At Work (<https://www.worksafebc.com/en/resources/health-safety/whmis/whmis-work-2015>) from WorkSafeBC, which provides an overview of WHMIS 2015, explains the key changes from the original WHMIS, outlines its four main elements, and describes the roles of suppliers, employers, and workers in safely managing hazardous products.

You may also watch the videos *WHMIS 2015 for Workers* (WHMIS video series) [4:11] and *WHMIS 2015 for Employers* [5:37] by WorkSafeBC (2015-a,b) on YouTube.



One or more interactive elements has been excluded from this version of the text. You can view them online here:
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If you are using a printed copy, you can scan the QR code with your digital device to go directly to the video: WHMIS video series. (<http://youtube.com/watch?v=NRKFc4DMFH0>)



Self-Test A-3.6: Explain WHMIS Education and Training

Complete Self-Test A-3.6 and check your answers.

If you are using a printed copy, please find Self-Test A-3.6 and Answer Key at the end of this section. If you prefer, you can scan the QR code with your digital device to go directly to the interactive Self-Test.



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Self-Test A-3.1: Explain the Hazardous Products Legislation

Complete Self-Test A-3.1 and check your answers.

1. What level of government is responsible for creating WHMIS?
 - a. Federal
 - b. Provincial
 - c. Municipal
 - d. Federal and provincial
2. What do the letters in WHMIS stand for?
 - a. Workplace Help Make It Safe
 - b. Worksite Hazard Made Isolated Standards
 - c. Workplace Hazardous Material Information System
 - d. None of the above
3. What is WHMIS also known as?
 - a. SDS
 - b. Shop rules
 - c. Hazard labels
 - d. The Right to Know requirement
4. Which federal legislation places responsibilities on suppliers to provide up-to-date SDSs with their products?
 - a. Federal Labelling Law
 - b. Hazardous Products Act
 - c. Controlled Substance Act
 - d. The Name It Right requirement
5. What does WHMIS call a pure substance or mixture that meets or exceeds criteria for inclusion in one or more of the WHMIS hazard classes?
 - a. Hazardous product
 - b. Dangerous mixture
 - c. Hazardous compound
 - d. Pure problematic substance
6. Who is responsible for providing up-to-date SDSs on hazardous products they sell or produce?
 - a. Owner
 - b. Worker
 - c. Supplier
 - d. Employer
7. Who is responsible for ensuring SDSs are available in the work area for all known hazardous products used?
 - a. Owner
 - b. Worker
 - c. Supplier
 - d. Employer
8. Who is responsible for the worker understanding the safe use of hazardous materials?
 - a. Owner

- b. Worker
 - c. Supplier
 - d. Employer
9. Where are SDSs supposed to be found?
- a. Supervisor's truck
 - b. WorkSafeBC officer's truck
 - c. Close to the work area and made available at all times
 - d. In worker's information booklet handed out at orientation
10. What do the letters SDS stand for?
- a. Safe dos and don'ts
 - b. Safety data sheet
 - c. Safer data specifications
 - d. Substance descriptor and safety
11. What are the two groups of hazardous products?
- a. Dusts and metals
 - b. Gases and liquids
 - c. Health and physical hazards
 - d. Oxidizing and respiratory hazards

Answer Key: Self-Test A-3.1 is on the other page.

Answer Key: Self-Test A-3.1

1. d. Federal and provincial
2. c. Workplace Hazardous Material Information System
3. d. The Right to Know requirement
4. b. Hazardous Products Act
5. a. Hazardous product
6. c. Supplier
7. d. Employer
8. b. Worker
9. c. Close to the work area and made available at all times
10. b. Safety data sheet
11. c. Health and physical hazards

Self-Test A-3.2: Describe the Key Elements of WHMIS

Complete Self-Test A-3.2 and check your answers.

1. How do suppliers make known the risks and hazards associated with a hazardous product?
 - a. Online courses
 - b. Over-the-counter instructions
 - c. Product labels and technical bulletins
 - d. Suppliers are not required to provide this information.
2. What responsibilities do employers have in the WHMIS program?
 - a. Provide education and training
 - b. Create product labels and technical bulletins
 - c. Employers are exempt from responsibility in the WHMIS program.
 - d. Provide first aid treatment in the case of exposure to hazardous products
3. Which WHMIS element is to be found on a hazardous product received from the supplier?
 - a. SDS
 - b. Product label
 - c. Toll-free helpline number
 - d. Occupational health and safety committee notes
4. When working with a hazardous product, what information should a worker know about the product?
 - a. Where to get further information
 - b. What hazards are associated with the product
 - c. What to do in case of an emergency
 - d. How to protect yourself from the hazards
 - e. All of the above

Answer Key: Self-Test A-3.2 is on the other page.

Answer Key: Self-Test A-3.2

1. c. Product labels and technical bulletins
2. a. Provide education and training
3. b. Product label
4. e. All of the above

Self-Test A-3.3: Describe the Labelling of Controlled Products

Complete Self-Test A-3.3 and check your answers.

1. What two types of labels are required by WHMIS when handling hazardous products?
 - a. Risk and first-aid labels
 - b. SDS and WHMIS labels
 - c. Storage and disposal labels
 - d. Supplier and workplace labels
2. What element of a supplier label provides the chemical or trade name of a hazardous product?
 - a. SDS reference
 - b. Hazard pictogram
 - c. Supplier identification
 - d. Product identification
3. Which part of the supplier label alerts a worker to specific risks or hazards of a hazardous product?
 - a. Hazard statements
 - b. Hazard pictograms
 - c. Product identification
 - d. Precautionary statement
4. Which part of the supplier label advises the worker on immediate treatment for an injury or accident with a hazardous product?
 - a. Hazard statements
 - b. Hazard pictogram
 - c. Product identification
 - d. Precautionary statements
5. Which part of the supplier label advises a worker on personal protective equipment when handling a hazardous product?
 - a. Hazard statements
 - b. Hazard pictograms
 - c. Product identification
 - d. Precautionary statements
6. Which part of the supplier label advises the worker, using a series of symbols, of the type of hazards associated with a hazardous product?
 - a. Hazard statements
 - b. Hazard pictograms
 - c. “Be careful” symbols
 - d. Product identification
7. A supplier label should be large enough and striking enough to jump out at the reader.
 - a. True
 - b. False
8. On the job, if a supplier label is accidentally ripped off a barrel containing a hazardous product, provided all workers are told what's in the barrel, no further action is necessary.

- a. True
 - b. False
9. To make her job easier, if a worker chooses to handle a hazardous product in an approved smaller container, what is that worker required to affix to that new container?
- a. SDS
 - b. Supplier label
 - c. Hazard pictogram
 - d. Workplace label
10. Creating a workplace label can be as easy as recording the three types of information with a sharpie on the side of the container.
- a. True
 - b. False
11. What information must a workplace label provide?
- a. Producer's address and phone number
 - b. Chemical symbol of hazardous product
 - c. Transportation of dangerous goods reference number
 - d. Safe-handling information, including protective-wear guidelines
12. Workplace labels are intended to be informative and relevant to the job and workers.
- a. True
 - b. False
13. Workplace labels must include pictograms and the supplier identifier.
- a. True
 - b. False
14. Which of the following products are covered by provincial health and safety regulations but are completely exempt from WHMIS legislation?
- a. Car batteries
 - b. Wood products
 - c. Tobacco products
 - d. All of the above
 - e. None of the above
15. Hazardous waste created on a job site is a major safety concern requiring special training of workers but is exempt from WHMIS.
- a. True
 - b. False

Answer Key: Self-Test A-3.3 is on the other page.

Answer Key: Self-Test A-3.3

1. d. Supplier and workplace labels
2. d. Product identification
3. a. Hazard statements
4. d. Precautionary statements
5. d. Precautionary statements
6. b. Hazard pictograms
7. a. True
8. b. False
9. d. Workplace label
10. a. True
11. d. Safe-handling information, including protective-wear guidelines
12. a. True
13. b. False
14. d. All of the above
15. a. True

Self-Test A-3.4: Describe Information to Be Disclosed on an SDS

Complete Self-Test A-3.4 and check your answers.

1. What information is provided in a material safety data sheet (SDS)?
 - a. Handling guidelines for a group of hazardous products
 - b. Employer responsibilities for handling a hazardous product
 - c. Detailed safety and health information about a single hazardous product
 - d. General safety and health guidelines about a group of hazardous products
2. Which section of an SDS identifies how the hazardous product enters the body and the possible health effects from single or repeated exposures?
 - a. First-aid measures
 - b. Hazard identification
 - c. Handling and storage
 - d. Toxicological information
3. Which section of an SDS identifies the hazardous product, the manufacturer, and the supplier, and describes the product's intended use?
 - a. Ingredients
 - b. Identification
 - c. Toxicological information
 - d. Stability and reactivity data
4. Which section of the SDS lists the specific chemical name and mixture concentrations for the components of the hazardous product?
 - a. Ingredients
 - b. Identification
 - c. Toxicological information
 - d. Stability and reactivity data
5. Which section of the SDS describes the flammability and conditions under which a hazardous product might explode?
 - a. Hazard identification
 - b. Composition/information
 - c. Toxicological information
 - d. Stability and reactivity data
6. Which section of an SDS would describe chemical properties such as specific gravity or the boiling point of a hazardous product?
 - a. Hazard identification
 - b. Firefighting measures
 - c. Accidental release measures
 - d. Physical and chemical properties
7. Which section of an SDS would describe either how to clean up a spill or the personal protective clothing and equipment that are required when handling the hazardous product?
 - a. Hazard identification

- b. Firefighting measures
 - c. Accidental release measures
 - d. Physical and chemical properties
8. Which section of an SDS would you refer to if a co-worker got splashed by a hazardous product?
- a. First-aid measures
 - b. Hazard identification
 - c. Handling and storage
 - d. Toxicological information
9. Which section of an SDS would you reference to check if the SDS is out of date?
- a. Identification
 - b. First-aid measures
 - c. Other information
 - d. Toxicological information
10. Which section of an SDS would you refer for the hazard classification of a hazardous product?
- a. First-aid measures
 - b. Hazard identification
 - c. Handling and storage
 - d. Toxicological information

Answer Key: Self-Test A-3.4 is on the other page.

Answer Key: Self-Test A-3.4

1. c. Detailed safety and health information about a single hazardous product
2. d. Toxicological information
3. b. Identification
4. a. Ingredients
5. d. Stability and reactivity data
6. d. Physical and chemical properties
7. c. Accidental release measures
8. a. First aid measures
9. c. Other information
10. b. Hazard identification

Self-Test A-3.5: Identify Pictograms Found on WHMIS Labels

Complete Self-Test A-3.5 and check your answers.

1. What is the purpose of the hazard pictograms found on WHMIS labels?
 1. Visually highlight that a hazard exists
 2. Classify a hazard in one of 31 hazard classes
 3. Provide personal protective equipment at a glance
 4. Provide physical and chemical properties at a glance
2. What section of the SDS must include the pictogram?
 1. First-aid measures
 2. Hazard identification
 3. Handling and storage
 4. Toxicological information
3. Which two pictograms are used for the hazard class of organic peroxides (Type B)?
 1. Flame and corrosion
 2. Flame and exploding bomb
 3. Flame and flame over circle
 4. Exploding bomb and corrosion
4. All hazard classes require a pictogram.
 1. True
 2. False

Description		Pictogram
I. _____	Gases under pressure	a. 
II. _____	Fire hazards	b. 
III. _____	Oxidizing hazards	c. 
IV. _____	Can cause death or immediate and serious toxic effects	d. 
V. _____	May cause less serious health effects or damage the ozone layer	e. 
VI. _____	Organisms or toxins that can cause diseases in people or animals	f. 
VII. _____	Can cause corrosive damage to metals, as well as skin, eyes	g. 
VIII. _____	Explosion or reactivity hazards	h. 
IX. _____	Serious health effects	i. 

5.

Answer Key: Self-Test A-3.5 is on the other page.

Answer Key: Self-Test A-3.5

1. a. Visually highlight that a hazard exists
2. b. Hazard identification
3. b. Flame and exploding bomb
4. a. False

Description		Pictogram
I. e	Gases under pressure	a. 
II. a	Fire hazards	b. 
III. g	Oxidizing hazards	c. 
IV. d	Can cause death or immediate and serious toxic effects	d. 
V. i	May cause less serious health effects or damage the ozone layer	e. 
VI. b	Organisms or toxins that can cause diseases in people or animals	f. 
VII. f	Can cause corrosive damage to metals, as well as skin, eyes	g. 
VIII. c	Explosion or reactivity hazards	h. 
IX. h	Serious health effects	i. 

5.

Self-Test A-3.6: Explain WHMIS Education and Training

Complete Self-Test A-3.6 and check your answers.

1. Who is responsible, under WHMIS legislation, for the education and training of workers who will handle hazardous products?
 - a. Worker
 - b. Supplier
 - c. WorkSafeBC
 - d. Employer
2. What key resources are used to create on-site WHMIS education and training?
 - a. WorkSafeBC guidelines and policies
 - b. supplier labels and SDSs found on site
 - c. WHMIS education the workers missed at their last job
 - d. Occupation Health and Safety regulations and guidelines relating to all work sites
3. Which of the following best describes the need for job specific WHMIS training?
 - a. Workers need a break and a WHMIS training day is just that.
 - b. WHMIS is to be taught again and again or the workers never learn.
 - c. Companies aren't required by law to provide training, so it is optional.
 - d. Specific awareness of hazardous products workers may handle on site.
4. What are the common main hazards for flammable gases, aerosols, liquids, and solids?
 - a. Oxidizers that may cause or intensify a fire or cause a fire or explosion.
 - b. Ability to ignite (catch fire) easily, and the main hazards are fire or explosion
 - c. May react on their own to cause a fire or explosion, or may cause a fire or explosion if heated
 - d. These products can catch fire very quickly (spontaneously) if exposed to air
5. Under certain conditions such as combustion, the hazard potential of many commonly found materials can change, posing a new threat to the health and safety of workers.
 - a. True
 - b. False
6. Safe work procedures written by the employer should be very general in scope and avoid overly detailed information.
 - a. True
 - b. False

Answer Key: Self-Test A-3.6 is on the other page.

Answer Key: Self-Test A-3.6

1. d. Employer
2. b. Supplier labels and SDSs found on site
3. d. Specific awareness of hazardous products workers may handle on site.
4. b. Ability to ignite (catch fire) easily, and the main hazards are fire or explosion
5. a. True
6. b. False

Sample Safety Data Sheet for Chromium Acetate Hydroxide

Printable PDF: Cr-Ac-OH-MSDS_SigmaAldrich (http://a-safetyfunctions-bcplumbingapprl1.pressbooks.tru.ca/wp-content/uploads/sites/241/2025/01/Cr-Ac-OH-MSDS_SigmaAldrich.pdf)

Material Safety Data Sheet

Version 4.1
Revision Date 10/23/2010
Print Date 02/08/2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	: Chromium(III) acetate hydroxide		
Product Number	: 318108		
Brand	: Aldrich		
Product Use	: For laboratory research purposes.		
Supplier	: Sigma-Aldrich Canada, Ltd 2149 Winston Park Drive OAKVILLE ON L6H 6J8 CANADA	Manufacturer	: Sigma-Aldrich Corporation 3050 Spruce St. St. Louis, Missouri 63103 USA
Telephone	: +19058299500		
Fax	: +19058299292		
Emergency Phone # (For both supplier and manufacturer)	: 1-800-424-9300		
Preparation Information	: Sigma-Aldrich Corporation Product Safety - Americas Region 1-800-521-8956		

2. HAZARDS IDENTIFICATION

Emergency Overview

WHMIS Classification

Not WHMIS controlled.

Not WHMIS controlled.

GHS Classification

Acute toxicity, Inhalation (Category 4)
Acute toxicity, Dermal (Category 4)
Acute toxicity, Oral (Category 4)
Skin irritation (Category 2)
Eye irritation (Category 2A)
Specific target organ toxicity - single exposure (Category 3)

GHS Label elements, including precautionary statements

Pictogram



Signal word

Warning

Hazard statement(s)

H302 + H312	Harmful if swallowed or in contact with skin.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.

Precautionary statement(s)

P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/ eye protection/ face protection.
P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 Call a POISON CENTER or doctor/ physician if you feel unwell.
P322 Specific measures (see supplemental first aid instructions on this label).
P330 Rinse mouth.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.

HMIS Classification

Health hazard: 0
Flammability: 0
Physical hazards: 0

Potential Health Effects

Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Skin May be harmful if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.
Ingestion May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : $C_{14}H_{23}Cr_3O_{16}$
Molecular Weight : 603.31 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Chromium(III) acetate hydroxide			
39430-51-8	254-447-3	-	-

4. FIRST AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Conditions of flammability

Not flammable or combustible.

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Chromium oxides

Explosion data - sensitivity to mechanical impact

no data available

Explosion data - sensitivity to static discharge

no data available

6. ACCIDENTAL RELEASE MEASURES**Personal precautions**

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions

Do not let product enter drains.

Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE**Precautions for safe handling**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

Keep in a dry place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment**Respiratory protection**

For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Specific engineering controls

Use mechanical exhaust or laboratory fumehood to avoid exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	powder
Colour	green

Safety data

pH	no data available
Melting/freezing point	no data available
Boiling point	no data available
Flash point	no data available
Ignition temperature	no data available
Autoignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	no data available
Density	no data available
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available
Relative vapour density	no data available
Odour	no data available
Odour Threshold	no data available
Evaporation rate	no data available

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

no data available

Conditions to avoid

no data available

Materials to avoid

Strong oxidizing agents

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Chromium oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50

no data available

Inhalation LC50

Dermal LD50

Other information on acute toxicity

no data available

Skin corrosion/irritation

no data available

Serious eye damage/eye irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Reproductive toxicity

no data available

Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)

Inhalation - May cause respiratory irritation.

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

no data available

Aspiration hazard

no data available

Potential health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects

no data available

Additional Information

RTECS: Not available

12. ECOLOGICAL INFORMATION**Toxicity**

no data available

Persistence and degradability

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

PBT and vPvB assessment

no data available

Other adverse effects

no data available

13. DISPOSAL CONSIDERATIONS

Product

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

15. REGULATORY INFORMATION

DSL Status

This product contains the following components listed on the Canadian NDSL list. All other components are on the Canadian DSL list.

Chromium(III) acetate hydroxide

CAS-No.
39430-51-8

WHMIS Classification

Not WHMIS controlled.

Not WHMIS controlled.

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.

16. OTHER INFORMATION

Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Referred to in A-3.4 Describe Information to be Disclosed on a Safety Data Sheet (SDS)

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Version History

This page provides a record of changes made to this learning resource, Plumbing Apprenticeship Level 1, Block A (<https://a-safetyfunctions-bcplumbingappr1.pressbooks.tru.ca/>). Each update increases the version number by 0.1. The most recent version is reflected in the exported files for this resource.

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If you identify an error in this resource, please report it using the TRU Open Education Resource Error Form.

Version	Date	Change	Details
1.0	May, 2026	Plumbing Apprenticeship Level 1 Block A learning resource from STBC content converted to open and freely accessible digital platform and published at TRU.	

Plumbing Apprenticeship & Trade Resources in BC

A successful career in plumbing requires a strong foundation of skills, knowledge, and workplace safety awareness. Below are key resources to support plumbing apprentices in BC, including educational pathways, trade certifications, workplace safety guidelines, and mental health and wellness support.

Plumbing Apprenticeship & Certification Resources

- **SkilledTradesBC – Plumbing Apprenticeship** (<https://skilledtradesbc.ca/plumber>) – Overview of plumbing training, certification requirements, and apprenticeship pathways in British Columbia.
- **Red Seal Program – Plumber** (<https://www.red-seal.ca/eng/trades/plumbers/overview.shtml>) – National certification program with exam prep guides and trade mobility information.
- **BC Building Codes & Standards** (<https://www.bccodes.ca/>) – Official building and plumbing codes for British Columbia.

Workplace Safety & Regulations

- **WorkSafeBC** (<https://www.worksafebc.com/en>) – Essential safety resources for plumbers, including:
 - Health & Safety – WorkSafeBC (<https://www.worksafebc.com/en/health-safety>)
 - Report Unsafe Working Conditions (<https://www.worksafebc.com/en/contact-us/departments-and-services/health-safety-prevention>)
 - Report a Workplace Injury or Disease (<https://www.worksafebc.com/en/claims/report-workplace-injury-illness>)
 - Submit a Notice of Project Form (<https://www.worksafebc.com/en/for-employers/just-for-you/submit-notice-project>)
 - Get Health and Safety Resources (Videos, Posters, Publications, and More) (<https://www.worksafebc.com/en/resources-health-safety>)
 - Search the OHS Regulations (and Related Materials) (<https://www.worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation>)
 - Conduct an Incident Investigation (<https://www.worksafebc.com/en/health-safety/create-manage/incident-investigations/conducting-employer-investigation>)
- **CCOHS: OHS Answers Fact Sheets – Plumber** (https://www.ccohs.ca/oshanswers/occup_workplace/plumber.html) – Safety guidelines and best practices for plumbers in various work environments.

Financial Supports

- **Financial Support (SkilledTradesBC)** (<https://skilledtradesbc.ca/financial-support>) – Information about grants, tax credits, Canada apprentice loans, employment insurance, and the Indigenous Skills and Employment Training

(ISET) program.

- **StudentAidBC** (<https://studentaidbc.ca/>) – Complete post-secondary education through student loans, grants, and scholarships. There is also programs that help with loan repayment.
- **WorkBC (Government of BC)** (<https://www.workbc.ca/find-loans-and-grants/students-and-adult-learners/services-apprentices-and-employers>) – Services for apprentices and employers.

Mental Health & Wellness Support

- **HealthLink BC – Mental Health and Substance Use** (<https://www.healthlinkbc.ca/mental-health-and-substance-use>) – HealthLink BC resources for mental health and wellness support.
- **Here2Talk** (<https://here2talk.ca/>) – Free and confidential counseling services available to all post-secondary students registered at a BC school.
- **Help Starts Here** (<https://helpstartshere.gov.bc.ca/>) – A database with over 2,500 listings of services related to mental health and substance use supports.
- **Hope for Wellness Helpline** (<https://www.hopeforwellness.ca/>) – 24/7 online chat and phone line with experienced and culturally competent counselors available to all Indigenous people in Canada.
 - First Nations Health Authority Mental Health Supports Info Sheet [PDF] (<https://www.fnha.ca/Documents/FNHA-mental-health-and-wellness-supports-for-indigenous-people.pdf>) by First Nations health Authority – List of culturally safe services for Indigenous people.
- **HeretoHelp – BC** (<https://www.heretohelp.bc.ca/>) – Mental health resources, including videos, articles, and support services in BC.
- **BC Construction Industry Rehabilitation Plan** (<https://www.constructionrehabplan.com/>) – Mental health and substance use services for CLRA and BCBT members and their families.
- **Virtual Mental Health Supports (Government of BC)** (<https://www2.gov.bc.ca/gov/content/health/managing-your-health/mental-health-substance-use/virtual-mental-health-supports>) – Virtual services are available for British Columbians who are experiencing anxiety, depression, or other mental health challenges.

Crisis Support

- **Interior Crisis Line Network** – Call 1-888-353-2273 (tel:+1-888-353-2273) for 24/7 emotional support, crisis intervention, and community resource information.
- **Talk Suicide Chat Service** (<https://talksuicide.ca/>) – An alternative if calling is difficult; available for crisis intervention.
- **310Mental Health Support** – Call 250-310-6789 (tel:+1-250-310-6789) for emotional support, information, and resources specific to mental health.
- **1-800-SUICIDE** – Call 1-800-784-2433 (tel:+1-800-784-2433) if you are experiencing feelings of distress or despair, including thoughts of suicide.
- **Opioid Treatment Access Line** – Call 1-833-804-8111 (tel:+1-833-804-8111) between 9 am and 4 pm to connect with a doctor, nurse, or healthcare worker who can prescribe opioid treatment medication that same day.
- **KUU-US Crisis Response Service** – Call 1-800-588-8717 (tel:+1-800-588-8717) for culturally-aware crisis support for Indigenous peoples in BC.
- **Alcohol and Drug Information and Referral Service** – Call 1-800-663-1441 (tel:+1-800-663-1441) to find resources and support.



Emergency Services — For life-threatening situations, call 911 or visit your nearest emergency department.