

WHMIS Instructor's Manual



MATERIAL SAFETY DATA SHEET – 9 Sections

1 – PRODUCT INFORMATION

Acetone

general-purpose cleaning of adhesives, contact cements, printing inks

Supplier's Name: Happy Chemical Company

Address: 5556 Helium Lane, Vancouver, BC

City: Vapour Town

Province: BC

Postal Code: X5X 5X5

Emergency Telephone: (604) 234-5678

HAZARDOUS INGREDIENTS

Ingredients (specific):

WORK SAFE BC

WORKING TO MAKE A DIFFERENCE
worksafebc.com

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Happy Chemical Company

5556 Helium Lane

Province BC

City Vapour Town

Postal Code X5X 5X5

Emergency Telephone (604) 234-5678

Supplier's Name

Street Address 123 Nitro Avenue

City Vapour Town

Province BC

Emergency Telephone (604) 345-6789

HAZARDOUS INGREDIENTS

Ingredients (specific)	%	CAS Number	LD ₅₀ of Ingredient (specify species)
	99-100		

WORK SAFE BC
WORKING TO MAKE A DIFFERENCE
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ACETONE ACÉTONE
SEE MATERIAL SAFETY DATA SHEET FOR
VOIR LA FICHE SIGNALÉTIQUE POUR

DANGER! EXTREMELY FLAMMABLE
IRRITATES EYES.
Keep away from heat, sparks, open flames, and hot surfaces. Do not use near fire or flames.
When pouring, do not breathe vapours or fumes. Avoid eye contact. Avoid prolonged contact with skin. Wear protective gloves. If acetone is on skin, wash with adequate ventilation.
Store in a cool, well-ventilated area, away from heat and sunlight.
In case of contact with eyes, flush eyes with lots of running water for 15 minutes, lifting the upper and lower eyelids occasionally. Get medical attention immediately. In case of contact with skin, immediately wash skin with lots of soap and water. Remove contaminated clothing and shoes. Get medical attention if irritation persists after washing. Wash clothing before reuse. If inhaled, remove subject to fresh air. Give artificial respiration if not breathing. Get medical attention immediately. If swallowed, do not induce vomiting. Get medical attention immediately. Do not breathe vapour.
ATTENTION! THIS CONTAINS HAZARDOUS INGREDIENTS. WEAR PROTECTIVE GEAR WHEN EMPTYING.

WCB PUBLICATIONS

Many publications are available on the WCB web site. The Occupational Health and Safety Regulation and associated policies and guidelines, as well as excerpts and summaries of the *Workers Compensation Act*, are also available on the web site: <www.worksafebc.com>

Some publications are also available for purchase in print:

Phone: 604 232-9704

Toll-free phone: 1 866 319-9704

Fax: 604 232-9703

Toll-free fax: 1 888 232-9714

Online ordering: <www.worksafebc.com> and click on Publications; follow the links for ordering

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If any conflict exists between this material and current WHMIS legislation or related policies, the legislation and policies shall take precedence.

2001 edition

National Library of Canada Cataloguing in Publication Data

Main entry under title:

WHMIS instructor's manual. -- [19--]-

Irregular.

Description based on 2001 ed.

ISSN 1499-4844 = WHMIS instructor's manual

1. Workplace Hazardous Materials Information System (Canada). 2. Hazardous substances - Labeling - Study and teaching - Canada. 3. Hazardous substances - Safety measures - Study and teaching - Canada. 4. Hazardous substances - Law and legislation - Study and teaching - Canada. I. Workers' Compensation Board of British Columbia. II. Title: Workplace Hazardous Materials Information System instructor's manual.

T55.3.H3S96

363.17'7'0971

C2001-960266-9

Contents

WHMIS Instructor’s Manual	1
Instruction Program	1
Resources	2
Instructor Preparation	3
Organizing Your Meeting Location	4
Program Delivery	4
Overview Module	7
WHMIS Development	8
Hazardous Materials	8
Legislation	9
WHMIS Elements	9
Key WHMIS Participants	10
<i>WHMIS</i> Video	10
<i>WHMIS Core Material</i> Manual	11
<i>Overview Exercises</i>	12
Classification Module	13
Legislation	13
Classification Responsibilities	14
WHMIS Classes	14
Classes and Symbols	15
Partially Exempt Products	23
Completely Exempt Products	24
<i>Transportation of Dangerous Goods Act</i> and WHMIS	25
<i>Classification Exercises</i>	26
Labels	27
WHMIS Labels	28
Responsibilities for Labelling	28
Supplier Label	29
Acceptable Format for the Supplier Label	30
Workplace Labels	31
Other Means of Identification	32
Laboratory Labelling	34

<i>Label Exercises</i>	36
<i>Laboratory Label Exercises (for Lab Workers)</i>	37
Material Safety Data Sheet	39
MSDS Responsibilities	39
MSDS Information	40
MSDS Sections	41
9-Section MSDS – Sample Format	43
Trade Secrets	51
MSDS Updates and Availability	52
<i>MSDS Exercises</i>	53
9-Section MSDS Checklist	54
Education/Implementation	59
WHMIS Program	59
Education and Training	63
<i>Implementation Exercises</i>	67
Appendix	69
WHMIS Classification Checklist	70
Material Safety Data Sheet – 9 Sections	72
9-Section MSDS Checklist	75
Controlled Product Description	79
Controlled Product Inventory Checklist	80
WHMIS Implementation Plan Checklist	81
WHMIS Education and Training Checklist	82

ABOUT THE WCB

The Workers' Compensation Board is an independent provincial statutory agency governed by a Board of Directors. It is funded by insurance premiums paid by registered employers and by investment returns. In administering the *Workers Compensation Act*, the WCB remains separate and distinct from government; however, it is accountable to the public through government in its role of protecting and maintaining the overall well-being of the workers' compensation system.

The WCB was born out of a compromise between B.C.'s workers and employers in 1917 where workers gave up the right to sue their employers or fellow workers for injuries on the job in return for a no-fault insurance program fully paid for by employers. The WCB is committed to a safe and healthy workplace, and to providing return-to-work rehabilitation and legislated compensation benefits to workers injured as a result of their employment.

WCB PREVENTION INFORMATION LINE

The WCB Prevention Information Line can answer your questions about workplace health and safety, worker and employer responsibilities, and reporting a workplace accident or incident. The Prevention Information Line accepts anonymous calls.

Phone 604 276-3100 in the Lower Mainland, or call 1 888 621-7233 (621-SAFE) toll-free in British Columbia.

To report after-hours and weekend accidents and emergencies, call 604 273-7711 in the Lower Mainland, or call 1 866 922-4357 (WCB-HELP) toll-free in British Columbia.

WHMIS Instructor's Manual

INSTRUCTION PROGRAM

Welcome to the WHMIS instruction program.

This instructor's manual is designed to assist you in delivering WHMIS education. This manual may also serve as a self-study guide.

The manual provides a means of reinforcing general WHMIS concepts presented in the *WHMIS* video. It will also give direction on how to begin to apply those concepts to the specific training needs in the workplace.

The manual cannot cover all of the information required for the safe use of controlled products on site. It is the employer's responsibility to determine the nature and extent of training required. The employer must consult with the Occupational Safety and Health Committee or Representative in the design and implementation of the program of instruction. Review of the material in this manual by the committee or representative will assist in that process.

The instructor's manual follows the natural progression required to deliver and implement WHMIS. However, as you review the material and prepare lesson plans, you'll see that much of the program delivery still relies on your knowledge of the workplace, and your ability to correctly assess your WHMIS requirements.

Detailed below is the information flow as presented in this manual. Depending on your current knowledge of WHMIS, the circumstances in which you are delivering the program, and the sections you intend to cover, some or all of these elements will be part of your planning.

- **Preparation**
- **Program Delivery**
- **WHMIS Implementation**

The "**Preparation**" section helps you prepare for presenting WHMIS education. It guides you through a review of WHMIS, and provides methods for relating this information to your group's workplace.

The combination of WHMIS and workplace information is vital. Every effort must be made to use site-specific examples throughout your sessions.

The "**Program Delivery**" section is a guide for presenting WHMIS. It provides you with a module-by-module presentation structure, information on how to use the resource materials contained in this package, and examples of how to integrate workplace information into your WHMIS presentation.

The video modules explain WHMIS requirements. However, your detailed follow-up review, workplace examples, and workbook exercises will help ensure participants understand the material and can apply it in the workplace.

The "**WHMIS Implementation**" section gives an eight-step plan for implementing WHMIS in the workplace. It covers the basic elements necessary to begin and maintain your WHMIS program. This section is also valuable in introducing new workers to your WHMIS program.

The combination of WHMIS and workplace information will determine the job procedures, on-site worker training, and workplace environment controls required for complete WHMIS implementation.

RESOURCES

The following materials are important resources for understanding and delivering WHMIS. These include:

- **The (WHMIS) video**
- **WHMIS Core Material Manual**
- **WHMIS at Work booklets**
- **Instructor's manual**
- **Participant workbooks**

The **video** contains a series of five modules:

- Overview
- Classification
- Labels
- Material Safety Data Sheets
- Education/Implementation

Depending on the module you are delivering, some or all of the video will form part of your presentation.

The video essentially packages the information contained in the **WHMIS Core Material manual**. The Core Manual is an excellent reference for further information.

The **WHMIS at Work** booklet explains the basics of WHMIS.

The **workbooks** are important to your presentation. Participants will each have a workbook to do in-class group exercises. These exercises will involve WHMIS information and specific workplace examples you've developed for the session. Participants will keep their workbooks for future reference.

This **instructor's manual** is your guide for WHMIS presentations. As you develop your specific workplace content, you will "customize" the manual to your requirements. Tailoring your presentations is an ongoing process that is dictated by changes in the workplace, or in WHMIS.

A note of advice: Your instructional efforts should focus on the overall goal of WHMIS . . . "the informed worker who is able to apply the information on the job," and the worker who can answer these four questions:

- **What are the hazards of the product you are using?**
- **How do you protect yourself?**
- **What should you do in case of an emergency or spill?**
- **Where do you get more information about this product?**

INSTRUCTOR PREPARATION

The question that must be answered before you begin this section is: “Do you understand WHMIS?” If you do not, then the first step in the preparation process is to proceed to the “Program Delivery” section.

In the delivery section, work through the WHMIS information, learn the material, and be prepared to relate this material to the workplace environment. Then come back to this section and develop workplace examples for your WHMIS presentation or self-study purposes.

Preparing for Your WHMIS Presentation

In each of the modules you present, there are opportunities to show how WHMIS contributes to health and safety in the workplace. Relating WHMIS to specific workplace examples will encourage class participation and get your group “WHMIS” oriented.

In order to develop your examples, do a “walk through” in all areas of the workplace, establishing an inventory of the controlled products, existing labels and MSDSs, work procedures, protective clothing, precautionary measures.

The “Group Discussion” sequence contained in each of the modules is an excellent guide for your workplace review. Space for your “Workplace Example”, where applicable, has been left blank for you to fill out.

In addition, there may be situations in your workplace that are not included as a workplace example. In this case, make a note of the situation, and present it to the class in the appropriate category.

For example, in the **Classification module**, select a variety of controlled products from the workplace as examples of the various WHMIS Classes. Where examples do not exist in the workplace, choose other examples that the participants could relate to.

Your preparation should lead to an in-class discussion of the controlled products used in the workplace.

In the **Label module**, choose a supplier label for a product used in the workplace. This may be supported with a workplace label for the same product. Further, you may show the class “other means of identification” for the same product, and explain when these may be used instead of a supplier label.

Your preparation should lead to the in-class development of a workplace label for a controlled product the participants are familiar with in their workplace.

For your **MSDS** presentation, find a variety of MSDSs from the workplace, and use these as examples for various sections of the MSDS presentation. It is an ideal opportunity to review important MSDS sections with the participants.

Your preparation should lead to an in-class review of MSDSs in their workplace.

Your presentation of the **Education/Implementation module** will accomplish two goals. It will review the requirements for WHMIS education and training and list an eight-step plan to implement and maintain WHMIS in the workplace.

The Education/Implementation module outlines this plan in detail and provides forms to assist you.

The Safety and Health Committee or Representative should be the first participants in your WHMIS presentation. They must play an advisory role in the development of the workplace examples and subsequent job procedures and workplace environment controls.

ORGANIZING YOUR MEETING LOCATION

Once you have familiarized yourself with this WHMIS video/print program, surveyed the workplace, developed your workplace examples, and organized any additional materials for your presentation, you must make arrangements for the presentation location.

Your arrangements may include:

- Meeting room or specific on-site location
- VHS video player and monitor
- Workbooks for all participants
- *WHMIS* video
- Additional WHMIS print materials (e.g. large size chart of the classification, hazard symbols, etc.)
- Flip chart or chalk board
- Examples of WHMIS materials from the workplace (labels, MSDS, etc.)
- Extra pens, paper
- Other material you wish to include in the presentation

PROGRAM DELIVERY

The “Program Delivery” section is a guide for presenting WHMIS.

It provides you with a module-by-module presentation structure, information on how to use the resource materials contained in this package, and examples of how to integrate workplace information into your WHMIS presentation.

As part of the presentation format, the video modules explain WHMIS requirements. However, your detailed follow-up review, workplace examples, and workbook exercises are necessary components of the overall instructional process.

As you progress through this section, you will see where your preparation efforts are required as part of the delivery format. However, if you are learning about WHMIS for the first time, treat this section as a self-study program. Once you’ve developed a solid understanding of WHMIS, review the “Instructor’s Preparation” section, develop the required materials, then integrate this information into your program delivery plan.

There are five modules in this WHMIS training package.

- **OVERVIEW**
- **CLASSIFICATION**
- **LABELS**
- **MSDS**
- **EDUCATION/IMPLEMENTATION**

These modules may be presented in a complete session or individually. If you are going to present an individual module, it is recommended that you present the Overview module first. The Overview will give participants an initial understanding of WHMIS.

Each module may be presented using the same format. This format includes:

- Introduction and review of the module
- Video
- Group discussion/material review
- Workplace examples/workbook exercises
- Summary and questions

Introduction

Your introduction to each module is an opportunity to give the group direction. You'll outline information to be covered, what is expected of the participants in terms of group discussion, workplace examples, and workbook exercises. Hand out the workbooks and *WHMIS at Work* booklets at this time.

A summary "Introduction" is included as part of each module's information breakdown. It is meant to provide background for other information you plan to introduce.

Video

Each video module offers a great deal of information. In some cases, you may wish to occasionally stop the video for discussion purposes. Or, you may play the video right through, then use it again as a step-by-step reference to guide participants through the program content.

In either case, you must do a thorough review of all the material presented in the video, adding to it your knowledge of the participants' workplace.

Discussion

The group discussion is one of the most important aspects of your presentation.

Each module has an information summary for your reference in leading the discussion. Much of this information is found in the video. Use this information, along with the workplace examples you've developed, to help participants relate WHMIS to specific situations in their workplace.

In addition to the video and instructor's manual, other materials that can be useful to your discussion may include: samples of workplace products covered by WHMIS, existing labels and MSDSs from the participants' workplace, and other supplier-related information.

Recognize and encourage your group's ideas and input. It is one of the best ways to ensure the group has a good understanding of the material.

Workbook Exercises/Workplace Examples

Throughout the group discussion, make reference to the participants' workplace, using various examples of WHMIS-related situations and requirements. The group should now be developing an understanding of the module content.

The workbook will be used to review the information learned in the module. The group will work on the exercises together. The exercises will include general WHMIS content, and specific workplace examples. The workplace examples will be a combination of information prepared by the instructor and other workplace input from the group.

Emphasize that the workbooks and *WHMIS at Work* booklets are personal copies that participants will keep. They will become familiar with these materials in-class and use them for future reference.

Summary/Questions

In closing, provide a brief review of the information discussed and the overall message.

Sample questions are provided at the end of each module.

Note: The questions are for general assistance only to help participants review course material. They do not necessarily represent the questions most applicable to your workplace and are not intended for formal examination purposes.

Following the module presentations is the on-site implementation of WHMIS. The education/implementation module deals specifically with this area, using the information presented in previous modules along with in-depth workplace information to determine the necessary job procedures, on-site worker education, and workplace hazard controls.

Overview Module

Introduction

The purpose of the Overview is to introduce WHMIS. The Overview module will cover:

- A brief background on WHMIS development
- Key elements of WHMIS (labels, MSDS, worker education and training)
- Responsibilities of suppliers, employers, and workers
- WHMIS program structure
- Program delivery format

Following the “Overview” module of the video, the instructor will review the information in a group discussion. Following the discussion, the class will do the workbook exercises.

Video

Play the video. You may stop the video to emphasize a point, or play it through then use it again as a step-by-step reference.

Group Discussion

The following information is a point form outline of the Overview video content. This will serve as a guide for you to review the material in-class and answer questions.

Use workplace examples, where possible, in the discussion.

WHMIS DEVELOPMENT

The purpose of WHMIS is to reduce injuries or diseases caused by exposure to hazardous materials used in the workplace.

Every person working with or near controlled products has the right to know the hazards and how to safely use the products.

WHMIS

- **WORKPLACE**
 - ↳ deals only with products used in the workplace
- **HAZARDOUS MATERIALS**
 - ↳ dangerous products that may cause fires, explosions, or health problems
- **INFORMATION SYSTEM**
 - ↳ provides information about hazardous materials

SECTION 1

WHMIS is a response to **Canadian workers' right to know** more about the health and safety hazards of materials used in the workplace. It has been in effect since October 31, 1988. This system provides workers and employers with vital information about hazardous materials.

BACKGROUND

- Nationwide system implemented at the federal and provincial levels in 1988
- Recognizing the interests of all concerned
 - ↳ government (regulators)
 - ↳ industry (suppliers)
 - ↳ labour (workers)
- Three key elements
 - ↳ labels
 - ↳ material safety data sheets (MSDS)
 - ↳ worker education and training

SECTION 2

HAZARDOUS MATERIALS

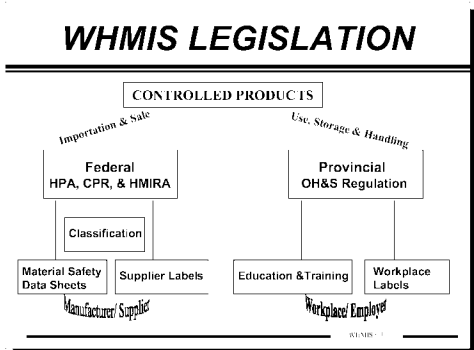
Hazardous materials are referred to as controlled products in the legislation. Exposure to hazardous materials can result in health problems such as irritation of the eyes, sensitization of the skin or lungs, heart ailments, kidney and lung damage, and cancer. Hazardous materials can cause fires, explosions, or other accidents when improperly stored or handled.

LEGISLATION

The **Federal** legislation deals with importation and sale of controlled products, and balances the worker's right to know with industry's need to protect confidential business information. The Federal *Hazardous Products Act* and the *Controlled Products Regulations* list the requirements for including products in WHMIS.

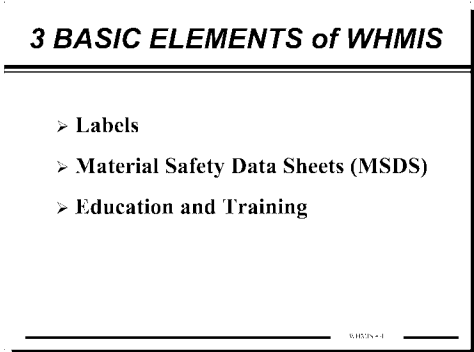
The *Hazardous Material Information Review Act* established a Commission to review and validate trade secret claims.

The **Provincial** legislation covers the use of hazardous material in the workplace under the *Occupational Health and Safety Regulation*.



WHMIS ELEMENTS

Labels, **Material Safety Data Sheet** (or MSDS), and **worker education and training** are the three communication elements of WHMIS.



Labels: Labels on containers of controlled products alert workers to the hazards and provide instructions for safe handling.

MSDS: Material Safety Data Sheets are technical bulletins that contain detailed hazard, precautionary, and emergency information about controlled products.

Worker education/training: Workers must receive education about the hazards of controlled products and training in safe work and emergency procedures.

KEY WHMIS PARTICIPANTS

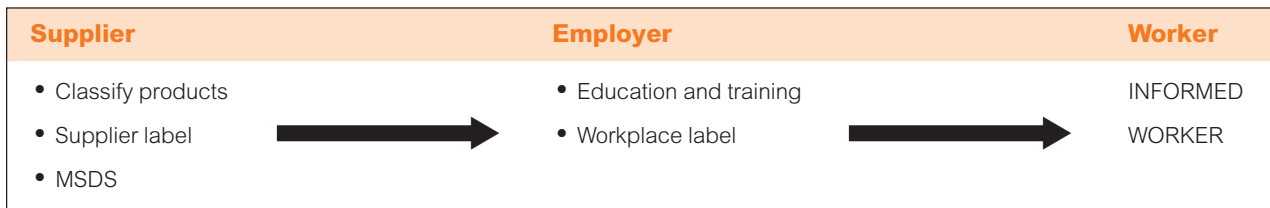
The **supplier**, **employer**, and **worker** are the three key WHMIS participants.

PARTICIPANTS	
>	SUPPLIERS
	↳ classify all controlled products
	↳ supply proper labels and MSDS
	↳ keep information on labels and MSDS current
>	EMPLOYERS
	↳ educate and train workers
	↳ provide safe work procedures
	↳ ensure availability of proper up-to-date labels and MSDS
>	WORKERS
	↳ understand content and significance of labels and MSDS
	↳ follow safe work procedures
	↳ notify employers about problems with labels and MSDS

Suppliers: Must classify controlled products and provide labels and MSDSs as a condition of sale.

Employers: Must ensure WHMIS information is readily available in the workplace, provide workplace labelling, and educate and train workers.

Workers: Must learn the information provided by employers and follow safe job procedures.



WHMIS VIDEO

The purpose of the program is to assist everyone in understanding and applying the information and requirements of WHMIS in their workplace.

The program contains five modules:

Overview: Introduces WHMIS, what will be covered in the instruction program, and what is expected of participants.

Classification: Discusses the classes of controlled products, examples of products exempt from WHMIS requirements, and the classification procedure. The classification information will be applied to an in-class discussion of controlled products in the workplace.

Label: Explains the different types of WHMIS labels (Supplier, Workplace, “Other Means of Identification”) and labelling responsibilities.

The video shows how labels are developed and provides a guide for developing an in-class sample label.

MSDS: Outlines the purpose of a Material Safety Data Sheet and how it relates to the worker. The MSDS module explains supplier, employer, and worker responsibilities for MSDSs, requirements for MSDS design and how to use an MSDS to develop safe work procedures and workplace labels.

The class will interpret information from a Material Safety Data Sheet and apply it to the workplace.

Education and implementation: Shows how to use WHMIS information and workplace knowledge to determine the necessary job procedures, on-site worker education, and workplace environment controls. The video shows the eight key steps to WHMIS implementation, examples of worker education requirements, and the necessity for the employer and Health and Safety Committee or Representative to develop the WHMIS program together.

WHMIS CORE MATERIAL MANUAL

The core material is a reference manual with technical information and regulatory policies which can assist with instructing all modules.

Overview Exercises

The questions and exercises contained in this series of workbook exercises use the same as those in the participant workbooks. Your copy, of course, is the only one with the answers included.

You may add further exercises or other information.

Your additional information should apply to workplace situations, your lesson plans for the day, or other additional resource information. This material is essential to the success of program delivery. The bottom line is that workers must be able to relate WHMIS to situations in their workplace.

1) WHMIS is the W _____ H _____ M _____ I _____ S _____.

Answer: WHMIS is the **Workplace Hazardous Materials Information System**.

2) Hazardous materials are referred to as _____ products in the *Hazardous Products Act*.

Answer: Hazardous materials are referred to as **controlled** products in the *Hazardous Products Act*.

3) The three key elements of WHMIS information delivery are _____, _____, and _____.

Answer: The three key elements of WHMIS information system are **labels**, **Material Safety Data Sheets** (or MSDS) and **worker education and training**.

4) The three main WHMIS participants are the _____, the _____, and the _____.

Answer: The three main WHMIS participants are the **supplier**, the **employer**, and the **worker**.

Classification Module

Introduction

The purpose of the Classification module is to show how tests and standards are used to determine which products are covered by WHMIS. We will have a look at the hazards associated with different classes of WHMIS products and learn what the information requirements are for products exempt from WHMIS.

Classification is the process of determining if a product falls within any of the six WHMIS classes and is subject to WHMIS information requirements.

The Classification module will cover:

- The classification process
- The six WHMIS classes
- Partially exempt products
- Completely exempt products

The class will watch the “Classification” module of the video, then review the information presented in a group discussion. Following the discussion, the class will do the workbook exercises.

(Answer any questions, then play the video)

Video

You may stop the video to emphasize a point, or play it through then use it again as a step-by-step reference.

Note: The *WHMIS Core Material* covers Classification and may be of assistance when handling detailed questions on this subject.

Group Discussion

The following is an outline of the Classification video content. This will serve as a guide for you to review the material in-class and answer questions.

Give examples of various kinds of controlled products used in your workplace.

LEGISLATION

Hazardous Products Act: Federal act governing many hazardous products. Hazardous products include prohibited, restricted, and controlled products.

Prohibited products: can't be imported, advertised, or sold in Canada. This includes certain toys and equipment hazardous to children, spackling compounds containing asbestos, and highly flammable paint removers with flash points less than -18 degrees Celsius.

Restricted products: must conform to consumer labelling legislation in order to be imported, advertised, or sold in Canada. Examples include bleaches, cleansers, and adhesives sold to the public.

Controlled products: products, materials or substances that fall into any of six WHMIS hazard classes.

WHMIS applies to controlled products for use in the workplace.

Classification: represents the foundation of WHMIS. The classification information helps determine label and MSDS content. This, in turn, determines the instruction employers must provide in worker education and training.

CLASSIFICATION RESPONSIBILITIES

Suppliers: must classify controlled products sold or imported in Canada. To classify a product, suppliers must determine if a product meets the requirements listed in the *Controlled Products Regulations*. If the product falls within WHMIS, the supplier must provide labels and MSDSs.

Employers: must classify any controlled products produced in their workplace. The employer must ensure that a WHMIS supplier labels and MSDSs are provided.

Workplace Example (Controlled Product Produced in the Workplace)

Workers: must understand the hazards of products they use. If they become aware that a product isn't properly classified, the employer should be informed immediately. By understanding the WHMIS classes, workers will have a greater awareness of the hazards of controlled products, and how to work safely with them.

WHMIS CLASSES

There are six classes of hazardous materials. Class D, Poisonous and Infectious Material, has three divisions. Each of these classes and divisions has a distinctive hazard symbol.

CLASS A: compressed gas

CLASS B: flammable and combustible material

CLASS C: oxidizing material

CLASS D: poisonous and infectious material

Division 1: materials causing immediate and serious effect

Division 2: material causing other toxic effects

Division 3: biohazardous infectious materials

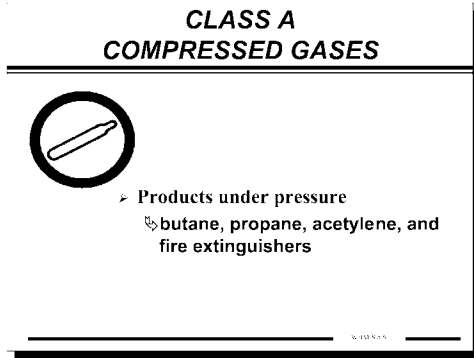
CLASS E: corrosive material

CLASS F: dangerously reactive material

CLASSES AND SYMBOLS

WHMIS covers six classes of controlled products, that are lettered A through F.

Eight hazard symbols are used for these different classes.

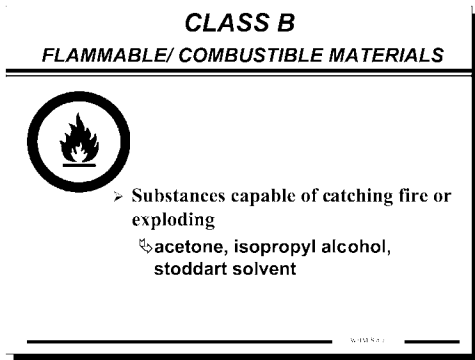


Hazards

If a pressurized container is punctured because it is dropped or exposed to excessive heat, the exploding fragments or rocket-like projectile present a serious physical hazard.

Examples include chlorine contained in a pressurized cylinder and used as a disinfectant at swimming pools, and oxygen used in oxyacetylene welding.

Workplace Example (Class A: Compressed Gas)



Class B, flammable and combustible material, has six divisions that are covered by the same hazard symbol:

Division 1: flammable gas

Division 2: flammable liquid

Division 3: combustible liquid

Division 4: flammable solid

Division 5: flammable aerosol

Division 6: reactive flammable material

Hazards

These materials can be hazardous in the workplace, posing a danger of fire and explosion. Flammables are more dangerous than combustibles because they ignite more easily. During use, they must be kept away from ignition sources such as sparks or open flames. When not in use, they must be stored in fire resistant cabinets or other specified storage areas.

Examples include acetone, a flammable product used as a solvent, and kerosene, a combustible liquid used as a fuel.

Workplace Example (Class B: Flammable and Combustible Material)

**CLASS C
OXIDIZERS**



- Products causing/ contributing to the combustion of other materials
 - ☞ hydrogen peroxide, potassium nitrate, sodium chlorate

Hazards

Oxidizing materials provide oxygen or a similar substance. They increase the risk of fire if they come in contact with materials that can burn.

They should never be stored near flammable or combustible materials.

Perchloric acid is a strong oxidizing agent used in laboratories.

Workplace Example (Class C: Oxidizing Materials)

**CLASS D
POISONOUS AND INFECTIOUS (D1)**



➤ Materials causing immediate and serious toxic effect
☞ arsenic, methylene chloride, and formaldehyde

Hazards

Materials causing death or immediate injury.

Examples include highly toxic sodium cyanide, used in the electroplating industry, which can be absorbed through the skin. The toxic gas, hydrogen sulphide, used in laboratories and present in the petroleum and pulp and paper industries, can cause death when inhaled at high concentrations.

Workplace Example (Class D: Division One)

**CLASS D
POISONOUS AND INFECTIOUS (D2)**



- Materials causing other toxic effect
 - immediate skin or eye irritation
 - chronic health effects on body organs, cardiovascular or nervous system
- ↳ e.g., carcinogens (crystalline silica), sensitizers (methyl methacrylate), embryotoxin (xylene)

Hazards

Materials causing immediate skin or eye irritation or long-term health problems such as skin/lung allergic response, birth defects, cancer, reproductive problems, or impairment of body organs and systems.

Asbestos is an example of a hazardous material that can cause cancer. Isocyanates, used in automobile painting, can cause sensitization of the skin or lungs. Some solvents can cause chronic effects on the central nervous system or liver.

Workplace Example (Class D: Division Two)

**CLASS D
POISONOUS AND INFECTIOUS (D3)**



- Biohazardous infectious materials - harmful microorganisms
 - ↳ Classified as Risk Groups II, III, or IV as defined by the Medical Research Council of Canada
 - ↳ Includes commercial cultures containing infectious organisms such as HIV, Ebola, and Hepatitis B


Hazards

Microorganisms (includes viruses, bacteria, fungi) that cause disease in persons and animals. They may be present in cultures.

Biohazardous infectious materials may be found in laboratory and research facilities associated with the medical or agricultural sectors.

Workplace Example (Class D: Division Three)

**CLASS E
CORROSIVE MATERIALS**



➤ Materials such as caustics or acids causing burns to skin or eyes
↳ sodium hydroxide, hydrochloric acid, and hydrofluoric acid

Hazards

Class E covers products that are corrosive to the skin or to metals.

It includes caustics such as lye and acids (for example, hydrochloric acid, also known as muriatic acid). Exposure to muriatic acid, directly or through inhalation of acid mist, will chemically burn or corrode skin, eye, or lung tissue.

Other examples include nitric acid, sulphuric acid, potassium hydroxide, ammonia.

Workplace Example (Class E: Corrosive Material)

CLASS F
DANGEROUSLY REACTIVE MATERIALS



> Products which can undergo dangerous reaction if subject to heat, light, pressure, shock, water, air
☞ hydrogen cyanide, benzoyl peroxide, chlorine dioxide

WHMIS-13

Hazards

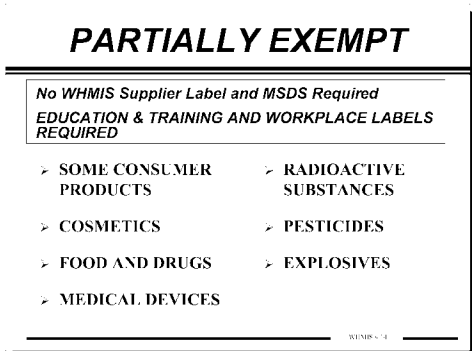
This class includes products that can undergo vigorous polymerization reaction on their own, or become self-reactive when exposed to shock or to increase in pressure or temperature. It also includes products that react vigorously with water to release a toxic gas.

An example is butadiene, used in manufacturing of ABS pipe. It undergoes vigorous self-reaction unless inhibitors are added to prevent the process from occurring. Some metal cyanides will liberate the highly toxic gas, hydrogen cyanide, when they come in contact with water.

Workplace Example (Class F: Dangerously Reactive Material)

PARTIALLY EXEMPT PRODUCTS

Partially exempt products are those already covered by other federal labelling legislation and therefore are exempt from federal WHMIS requirements for WHMIS labels and MSDSs. However, Provincial legislation requires that employers educate workers about the hazards and train them in safe work procedures, and to use workplace labelling when, for example, contents are transferred to new containers.



Consumer Goods

The partial exemption for consumer goods applies to restricted products packaged for sale to consumers through the retail system. Some examples are bleaches or cleansers containing chlorine, a corrosive chemical such as hydrochloric acid, turpentine, and mineral spirits.

Workplace Example (Consumer Goods)

Cosmetics

In order for a cosmetic to qualify for an exemption under WHMIS, it must be represented for use as a cosmetic. If sold for another use, it falls within WHMIS. For example, the chemical acetone is excluded from WHMIS when sold in a nail polish remover but included when sold as an industrial solvent.

Workplace Example (Cosmetics)

Pesticides

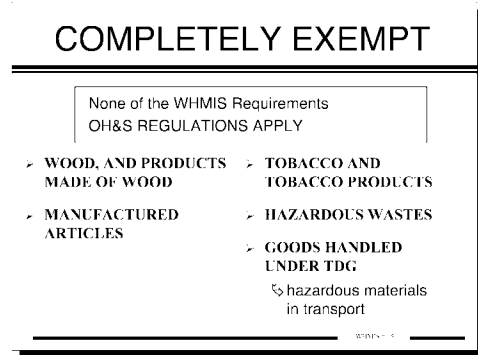
Pesticides are also defined in terms of intended use. For example, Stoddard solvent is a herbicide that is also used as an industrial solvent. When sold as an industrial solvent, WHMIS information requirements apply.

Workplace Example (Pesticides)

Note: A good teaching technique is to have an example of labels used with these products. Examples of labels for partially-exempt products are given in the *WHMIS Core Material* manual. You may also wish to discuss explosives or radioactive substances if they are used in the workplace.

COMPLETELY EXEMPT PRODUCTS

Some products are completely exempt from both Federal and Provincial WHMIS requirements. However, workers must be trained in safe handling procedures, as required under occupational health and safety regulations.



Wood and Products Made of Wood

Wood or products made of wood refers to structured items including lumber, plywood, particleboard, and wood products coated with additives such as paints or preservatives.

However, these additives may be subject to WHMIS before they are included in the finished product.

Turpentine and tall oil – made from the chemical components of wood but lacking the properties of wood – are not considered products made of wood and are subject to WHMIS.

Workplace Example (Product Made of Wood)

Manufactured Articles

A manufactured article is any article formed to a specific shape or design with an intended use that depends on that shape or design, and will not expose people to a controlled product under normal conditions of use. Examples include refrigerators (which contain refrigerant gases), car batteries, vehicles, precut threaded piping. However, welding rods are not manufactured articles because, although they conform to a specific design, during use they release controlled products.

Sheets of friction material containing asbestos and produced to be cut later or shaped to make specific friction products are also not manufactured articles.

Workplace Example (Manufactured Article)

TRANSPORTATION OF DANGEROUS GOODS ACT AND WHMIS

Controlled products being handled, offered for transport or transported are subject to the *Transportation of Dangerous Goods Act*, or “TDG”.

The *Transportation of Dangerous Goods Act/Regulations* and WHMIS are complementary information systems. TDG covers information on product shipments to or from workplaces whereas WHMIS applies to products within workplaces. No overlap is intended.

TDG

Workers are most likely to be exposed to dangerous goods in transit during emergency short-term circumstances such as vehicle accidents and spills. TDG requirements deal with acute exposure information and require containers and transport vehicles to be provided with labels and placards.

Workplace Example (TDG Products)

WHMIS

Exposure to controlled products in the workplace can occur in a wider variety of circumstances and over longer periods of time. WHMIS requirements are more extensive than TDG and include the use of explicit labels and Material Safety Data Sheets, and worker education and training.

Classification Exercises

The questions and exercises are the same as those in the participant workbooks. Your copy, of course, is the only one with the answers included.









You may add further exercises or other information.

Your additional information should apply to workplace situations, your lesson plans for the day, or other resource information. This additional material is essential to the success of program delivery. The bottom line is that workers must be able to relate information from the classification module to situations in their workplace.

1) _____ are responsible for classifying all controlled products imported into or sold in Canada.

Answer: Suppliers are responsible for classifying all controlled products imported into or sold in Canada.

2) Match the hazard symbol to the hazards.

WHMIS Hazard Class Exercise		
Hazard Symbol	Hazards	Answer
	1) Caustics or acids which can destroy skin or eat metals.	6
	2) Capable of catching fire or exploding in the presence of an ignition sources.	4
	3) Can undergo dangerous reactions with heat, pressure, impact, or contact with water.	5
	4) Provide oxygen which can increase the risk of fire.	8
	5) Contain harmful microorganisms.	1
	6) Can cause death of a person exposed to small amounts.	7
	7) Can cause immediate skin or eye irritation or long-term health effects.	3
	8) Can explode if exposed to heat or impact.	2

3) As an in-class inventory, list and classify some products in your workplace that fall under WHMIS information requirements.

Note: You may wish to use the *Controlled Product Inventory form* and *Classification worksheet* in the Appendix.

Labels

Introduction

In this module, you will be introduced to the two types of WHMIS labels and other means of identification. You will learn about the responsibilities for developing and applying the labels and details about their design and content.

The Label module will cover:

- Different types of WHMIS labels
- Label content
- Responsibilities for labelling
- Laboratory labelling requirements

The group will watch the “Label” module of the video, then review the information presented in a group discussion. Following the discussion, the class will do the workbook exercises.

(Answer any questions, then play the video.)

Video

You may want to stop the video to emphasize a point, or play it through then use it again as a step-by-step reference.

Note: The *WHMIS Core Material* manual deals with labelling and may be of assistance when answering detailed questions on this topic.

Group Discussion

The following information is an outline of the Label video content. This will serve as a guide for you to review the material in class and answer questions.

Use workplace examples where possible in your discussion.

WHMIS LABELS

The purpose of labels is to alert workers to the main hazards of controlled products and provide instructions for safe handling, and to direct workers to the MSDS for more information.

The two types of WHMIS labels are the **supplier label** and the **workplace label**.

Other means of identification may be used where appropriate (such as warning signs, colour codes, placards).

WHMIS LABELS

- All WHMIS controlled products must be labelled.
- There are 2 types of WHMIS Labels
 - ↳ Supplier Labels
 - ↳ Workplace Labels
- Other means of identification
 - ↳ placards, warning signs, colour codes
- Labels alert workers to hazards and safe handling instructions

RESPONSIBILITIES FOR LABELLING

Suppliers:

- Must provide WHMIS supplier labels on containers of controlled products sold for use in the workplace in Canada.

Employers:

- Must check to see that controlled products received from suppliers have WHMIS supplier labels.
- Must develop and apply workplace labels and other means of identification where necessary on various workplace containers and transfer and reaction systems, and
- Must make sure workers recognize and understand labels and are trained in safe work and emergency procedures.

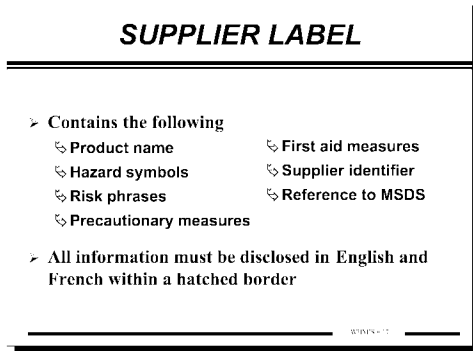
Workers:

- Must learn information on labels before using controlled products, and
- Must follow safe work procedures.

SUPPLIER LABEL

Supplier Label Content/Categories

There are seven categories that must appear on a typical WHMIS supplier label.



The **Product Identifier** is the product name. The name on the label must be identical to the product identifier on the Material Safety Data Sheet.

The **Supplier Identifier** includes the supplier, manufacturer, or importer’s name and the location of the principal place of business.

A **Reference to the MSDS**, such as “SEE MATERIAL SAFETY DATA SHEET” must appear on the WHMIS supplier label when a Material Safety Data Sheet is required.

WHMIS Hazard Symbols must be reproductions of the symbols required by regulation. They will have a distinctive circular border and must be displayed in a colour that won’t be confused with Transportation of Dangerous Goods safety marks. For example, the TDG colour for the explosive symbol is orange. Therefore, no WHMIS symbol may be orange because federal WHMIS legislation does not cover explosives.

The **Risk Phrases** must use wording that clearly indicates the risks associated with the product’s use.

The **Precautionary Measures** for the safe handling, use, and storage of hazardous materials must be clearly indicated.

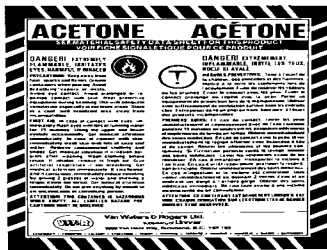
The **First Aid Measures** must describe immediate first aid steps to be taken in the event of harmful contact with the product.

Note: It is useful to have students review the seven types of information using an actual supplier label from your workplace.

ACCEPTABLE FORMAT FOR THE SUPPLIER LABEL



SUPPLIER LABEL EXAMPLE



Supplier Label Design

Supplier labels must be designed for legibility and durability. Letters, numbers, and borders must be in a colour that contrasts distinctly from other markings on the container.

Supplier labels must be in both English and French. Most require this *distinctive hatched border design*.

Depending on the size and type of container, all or some of the seven types of information will be included on supplier labels.

Supplier Label Content (for containers less than 100 ml)

For small containers of 100 ml or less in size, supplier labels need only display four categories: the product identifier, supplier identifier, a reference to the MSDS, and hazard symbols.

WORKPLACE LABELS

Workplace labels are required on containers of controlled products produced on site, and on secondary containers where the product has been transferred from the original container.



Workplace Label Content

The format for workplace labels is flexible, as long as three basic types of information appear:

The **product identifier** must be identical to the product identifier on the corresponding Material Safety Data Sheet.

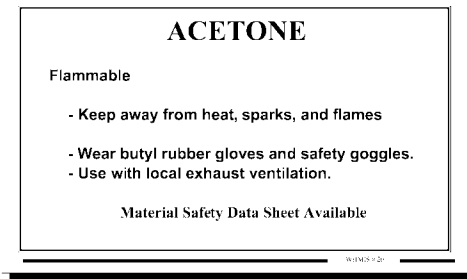
Information for safe handling states the precautions necessary to reduce health risks or injury.

If a Material Safety Data Sheet is available, a statement to that effect must be included.

Workplace Labels must be used on:

- a) Storage containers of controlled products produced on-site
- b) Storage containers to receive bulk shipments (unless the supplier provides a label)
- c) Secondary containers into which a product has been transferred from the original container
- d) Supplier containers with illegible labels unless supplier labels are available

WORKPLACE LABEL EXAMPLE



Workplace Label Design

The workplace label may be in the language of choice in the workplace.

Workplace Example

Note: It is useful to discuss workplace labels with students by having them review an actual workplace label from your workplace or by having them write up a workplace label based on the information from an actual supplier label.

OTHER MEANS OF IDENTIFICATION

In certain cases, workplace labels need not be used. Other means of visual identification will do, such as product names, colour or number codes, placards, and even piping diagrams. These other means must be used in combination with worker education to ensure that workers are able to identify contents.

Other means of identification may be used to identify:

- a) Locations where workplace hazardous waste produced in the workplace are stored
- b) Controlled product transfer systems such as pipes or conveyor belts
- c) The contents of reaction or process vessels
- d) The contents of portable containers that are filled directly from a labelled container and will be under the control of the worker who transferred the product to the new container for use on the same shift.

Workplace Example (Other Means of Identification)

Special Information for Shipper/Receivers

The **supplier** of any controlled products manufactured, processed, packaged, imported, or sold in Canada has a basic responsibility to provide and apply, as a condition of sale, WHMIS supplier labels.

A product may be shipped in a single container, in a multi-container, or in bulk.

Single-container shipment: the supplier is responsible for ensuring that the WHMIS supplier label has been applied.

Workplace Example (Single-container Shipment)

Multi-container shipment: When inner containers are used in a multi-container shipment, the supplier must apply labels to both inner and outer containers, unless a written agreement is made with the purchaser to apply the supplier's labels to the inner containers. If inner containers aren't labelled (by agreement), the outer container must bear a supplier label.

Workplace Example (Multi-container Shipment)

Multi-container TDG shipment: When a multi-container shipment requires a TDG label for transport, the supplier does not have to provide a WHMIS label on the outer container as long as all inner containers bear WHMIS labels.

Workplace Example (Multi-container TDG Shipment)

Bulk shipments: For bulk shipments, the supplier need not apply a supplier label to the bulk container. However, the supplier must provide either a supplier label, or alternative labelling information to the employer when the product is received. This alternative labelling information, for example, could be attached to the Material Safety Data Sheet.

Workplace Example (Bulk Shipments)

LABORATORY LABELLING

Note: The following label information and exercises on laboratories is meant only for participants who work in laboratories.

In laboratories, some modification of general labelling requirements will be permitted.

Laboratory Supply House Product (less than 10 kg)

Supplier labels for controlled products from laboratory supply houses do not need the distinctive hatched border or hazard symbols if they are packaged in less than 10 kilogram quantities and intended for use in a laboratory.

The label must disclose:

- a) Product identifier
- b) Risk phrases
- c) Precautionary measures
- d) First aid measures
- e) Where an MSDS is available, a statement to that effect

Suppliers of such chemicals are required to provide an MSDS, except where the label discloses all the information required on the MSDS.

Workplace Example (Laboratory Supply House Product Less than 10 kilogram in Size)

Laboratory Samples (less than 10 kg/no MSDS available)

Supplier labels for laboratory samples packaged in less than 10 kilogram quantities and for which no MSDS is available must display the distinctive WHMIS label border and disclose:

- a) Product identifier
- b) Supplier identifier
- c) Identity of ingredients when known
- d) The statement in English and in French to the effect “Hazardous laboratory sample, for hazard information, or in an emergency call . . . (emergency telephone number).”

Workplace Example (Laboratory Samples Packaged in Less than 10 kilogram Quantities/No MSDS)

Portable containers filled from supplier containers, as well as products produced in a laboratory for research and development work in the same lab, do not need a workplace label, only a means of product identification.

Workplace Example (Portable Container/Other Means of Identification)

Labelling Requirement for Small Containers and Laboratory Chemicals

Information Item	Small Container (< 100 mL)	Laboratory Supply House (< 10 kg)	Laboratory Sample (< 10 kg)
1) Product Identifier	✓	✓	✓
2) Chemical Identity			✓
3) Hazard Symbol(s)	✓		
4) Risk Phrases		✓	
5) Precautionary Measures		✓	
6) First Aid Measures		✓	
7) Supplier Identifier	✓		✓
8) Reference to MSDS	✓	✓	
9) Emergency Phone Number			✓
10) Hatched Border	✓		✓
11) English and French	✓	✓	✓

Label Exercises

The questions and exercises are the same as those in the participant workbooks. Your copy, of course, is the only one with the answers included.

You may add further information.

Your input will contain questions and exercises related to the participants' workplace situations, your lesson plans for the day, or other resource information.

This additional material is essential to the success of program delivery. The bottom line is that workers must be able to relate information from the Label module to situations in their workplace.

1) What is the purpose of a WHMIS label?

Answer: To alert workers to the hazards of controlled products and the safe work procedures, and to direct workers to the second part of the WHMIS information system, the Material Safety Data Sheet.

2) What are the two types of WHMIS labels?

Answer: Supplier label and workplace label.

3) Review and identify the seven types of information on a supplier label from your workplace.

Answer: Product identifier, supplier identifier, reference to the MSDS, hazard symbols, risk phrases, precautionary measures, and first aid measures.

4) Identify the three types of information on this workplace label.

Solv-easy
Extremely flammable.
Keep away from sparks, heat, and open flame.
Use local exhaust ventilation or NIOSH-approved organic vapour respirator.
Wear neoprene gloves and chemical splash goggles.
See the MSDS.

Answer: Product identifier, safe handling information, reference to Material Safety Data Sheet.

5) Name two situations where other means of identification can be used.

Answer: Two of:

- Locations where workplace hazardous waste produced in the workplace are stored
- Controlled product transfer systems such as pipes or conveyor belts
- The contents of reaction or process vessels
- To identify the contents of portable containers that are filled directly from a labelled container and will be under the control of the worker who transferred the product to the new container for use on the same shift
- Decanted products in labs

- f) Products not in containers
 - g) Products intended for export
- 6) As an in-class exercise, choose a product in your workplace that falls within WHMIS requirements, and develop a workplace label for that product.

Answer: Review worker answers. Make sure the labels show the three types of information that are simple and direct.

Laboratory Label Exercises

(FOR LAB WORKERS)

1) Supplier labels for controlled products from laboratory supply houses do not need the distinctive border, _____, or _____ if they are packaged in less than 10 kilogram quantities and intended for use in a laboratory.

Answer: Hazard symbols or supplier identifier.

2) Laboratory Supply Houses must provide an MSDS for their products, except where the _____ discloses all the information required on the MSDS.

Answer: Label.

3) A Laboratory sample usually does not have an MSDS prepared for it. Identify the WHMIS categories required on the label.

Answer: WHMIS label border, product identifier, supplier identifier, identity of ingredients where known, an emergency telephone number.

4) Portable containers filled from supplier containers, as well as products produced in a laboratory for research and development work in the same lab, do not need a workplace label, only _____.

Answer: A means of product identification.

Material Safety Data Sheet

Introduction

This module will introduce the Material Safety Data Sheet. You will learn about the **purpose** of an MSDS, who is **responsible** for its content, the basic rules for its **design**, and some details of the **information** it must contain.

An MSDS is a technical bulletin that provides detailed hazard, precautionary, and emergency information about a controlled product. The data sheet is the second element of the WHMIS information system and is meant to supplement the alert information provided on labels.

MSDSs are required reading and must be used in the development of safe work procedures. Employers must ensure workers understand the content of the MSDS.

The group will watch the “MSDS” module of the video, then review the information presented in a group discussion. Following the discussion, the class will do the workbook exercises.

(Answer any questions, then play the video.)

Video

This video provides a substantial amount of information to help workers actually read and understand an MSDS. It is suggested that before playing the video, you have participants look over a sample MSDS as provided in their workbook and draw their attention to the various items of information (supplier identifier, LD₅₀, flashpoint, etc.) that will be discussed.

You may stop the video to emphasize a point or play it through then use it again as a step-by-step reference.

Note: The *WHMIS Core Material* manual covers the Material Safety Data Sheet and may be of assistance when dealing with detailed questions on this topic.

Group Discussion

This “Group Discussion” section contains an outline of the MSDS video content. This will serve as a guide for you to review the material in-class and answer questions.

Use workplace examples where possible in the discussion.

MSDS RESPONSIBILITIES

Suppliers: must provide employers with a current MSDS (prepared within three years) on or before the product sale or importation. The MSDS must be available in English and French and be reviewed every three years.

Employers: must ensure an up-to-date supplier MSDS is obtained the first time a controlled product is received in the workplace.

They must make the MSDS available to workers and ensure workers understand the health and safety information on the MSDS.

Employers producing controlled products for use in the workplace – other than products produced and consumed in a reaction vessel – must produce data sheets that meet WHMIS standards.

Workers: must learn information provided by the employer and apply it, as directed, to the job.

MSDS INFORMATION

USES of MSDS

- Provides detailed information of the hazards of a controlled product
- An important element for developing safe work procedures and control measures
- A key element of worker education and training

MATERIAL SAFETY DATA SHEET (MSDS)

- A technical document providing information on a controlled product:
 - ↳ hazardous ingredients
 - ↳ hazards (fire, explosion, reactivity)
 - ↳ health effects of exposure (acute and chronic)
 - ↳ hazard evaluation related to storage and handling
 - ↳ measures to protect workers
 - ↳ emergency procedures
- Must be current (no more than 3 years old), complete, and readily available to workers

MSDS Design

Any design of MSDS may be adopted as long as some basic rules are followed.

The *Controlled Products Regulations* list 54 items of information in nine recommended sections on an MSDS, but does not require a standard format. MSDSs may be in different formats, and sections can be arranged in a different order.

In addition, none of the sections can be left blank. If information for an item is either not available or not applicable then the item must indicate that fact. The abbreviation NA is unacceptable where it is necessary to distinguish between the two terms.

RULES for COMPLETING MSDS

- Must not be more than 3 years old
- 9 recommended sections
- 54 items of information
- Specific hazardous ingredients must be disclosed (No "trade secrets/ proprietary" allowed unless a claim has been registered)
- Any abbreviations used must be defined
- Information must be specific
- No blanks
- No contradictory information

No Standard Format under WHMIS

9-10-97

MSDS SECTIONS

The following are the nine recommended section headings and the types of information found in each section:

Product Information

Product name, product use, and information on how to contact the supplier or manufacturer.

Hazardous Ingredients

Chemical names of the hazardous ingredients, percentages, and the acute toxicity data for each component.

Physical Data

General information on physical properties of the product (e.g. specific gravity, boiling point, evaporation rate).

Fire and Explosion Data

Conditions under which the product may catch fire or explode, and the means of extinction.

Reactivity Data

Conditions and other substances that should be avoided to prevent dangerous reactions.

Toxicological Properties

Identifies how the substance enters the body and what the short- and long-term health effects are.

Preventive Measures

Information on control measures including ventilation, personal protective equipment, and work procedures.

First Aid Measures

Specific instructions for immediate treatment in case of injury or illness.

Preparation Information

Lists who prepared the MSDS and when.

Workplace Example (MSDS)

You may wish to have students take a look at an actual MSDS.

9-SECTION MSDS — SAMPLE FORMAT

A sample format for a 9-section MSDS is shown on the next three pages followed by descriptions of some of the information items.

SECTION 1 — Product Information

Product Identifier		WHMIS Classification (<i>optional</i>)	
Product Use			
Manufacturer's Name		Supplier's Name	
Street Address		Street Address	
City	Province	City	Province
Postal Code	Emergency Telephone	Postal Code	Emergency Telephone

SECTION 2 — Hazardous Ingredients

Hazardous Ingredients (<i>specific</i>)	%	CAS Number	LD ₅₀ of Ingredient (<i>specify species and route</i>)	LC ₅₀ of Ingredient (<i>specify species</i>)

SECTION 3 — Physical Data

Physical State	Odour and Appearance		Odour Threshold (ppm)
Specific Gravity	Vapour Density (air = 1)	Vapour Pressure (mmHg)	Evaporation Rate
Boiling Point (°C)	Freezing Point (°C)	pH	Coefficient of Water/Oil Distribution

SECTION 4 — Fire and Explosion Data

Flammability <input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, under which conditions?		
Means of Extinction			
Flashpoint (°C) and Method	Upper Flammable Limit (<i>% by volume</i>)	Lower Flammable Limit (<i>% by volume</i>)	
Autoignition Temperature (°C)	Explosion Data — Sensitivity to Impact	Explosion Data — Sensitivity to Static Discharge	
Hazardous Combustion Products			

Product Identifier:

SECTION 5 — Reactivity Data

Chemical Stability <input type="checkbox"/> Yes <input type="checkbox"/> No	If no, under which conditions?
Incompatibility with Other Substances <input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, which ones?
Reactivity, and Under What Conditions?	
Hazardous Decomposition Products	

SECTION 6 — Toxicological Properties

Routes of Entry <input type="checkbox"/> Skin Contact <input type="checkbox"/> Skin Absorption <input type="checkbox"/> Eye Contact <input type="checkbox"/> Inhalation <input type="checkbox"/> Ingestion	
Effects of Acute Exposure to Product	
Effects of Chronic Exposure to Product	
Exposure Limits (<i>value, source, date</i>)	Irritancy (<i>if yes, explain</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No
Sensitization (<i>if yes, explain</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No	Carcinogenicity (<i>if yes, explain</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No
Reproductive Toxicity (<i>if yes, explain</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No	Teratogenicity (<i>if yes, explain</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No
Mutagenicity (<i>if yes, explain</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No	Synergistic Products (<i>if yes, explain</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No

SECTION 7 — Preventive Measures

Personal Protective Equipment <input type="checkbox"/> Gloves <input type="checkbox"/> Respirator <input type="checkbox"/> Eye <input type="checkbox"/> Footwear <input type="checkbox"/> Clothing <input type="checkbox"/> Other	
If checked, specify type	
Engineering Controls (<i>specify, such as ventilation, enclosed process</i>)	
Leak and Spill Procedure	
Waste Disposal	
Handling Procedures and Equipment	
Storage Requirements	
Special Shipping Information	PIN

Product Identifier:

SECTION 8 — First Aid Measures

Inhalation
Ingestion
Skin Contact
Eye Contact

SECTION 9 — Preparation Information

Prepared by (<i>group, department, etc.</i>)	Telephone Number	Preparation Date
--	------------------	------------------

Section One: Product Identification and Use

Product identifier: the product name. The identifier on the data sheet must be identical with the identifier on the product label. If a data sheet applies to more than one product, all label identifiers must appear on the data sheet.

Product use: specifies the intended product use. Other uses may pose other risks. For example, a solvent intended for degreasing tanks may pose a significant risk to workers if used as a manual cleaning agent because it may evaporate easily.

Manufacturer name, address, and emergency telephone number: useful for obtaining additional product information.

The **Supplier** information is included if different from the manufacturer.

Workplace Example (MSDS with Product Use)

Section Two: Hazardous Ingredients

This section provides information on the identity, concentration, and acute toxicity for ingredients in a controlled product.

Any ingredient that meets any of the following must be disclosed:

- a) If it is present at a concentration of 0.1% or more and is classified as a cancer-causing agent, mutagen, lung sensitizer, causes birth defects, or reproductive problems
- b) If the ingredient is any other controlled product that is present at a concentration of at least 1%
- c) If the ingredient is included on the Ingredient Disclosure List and is present at a concentration equal to or more than the concentration shown on the list

The Ingredient Disclosure List is a list of substances which, if present in a controlled product, must be disclosed on an MSDS. It contains about 1,700 entries. It is only used as one criteria for disclosure of hazardous ingredients and is not intended for classification purposes.

LD₅₀: a measure of a substance's immediate toxicity. It is the lethal dose of a substance expected to cause the death of 50 percent of an animal population, such as rabbits, rats or mice, when administered into the mouth or applied to the skin.

LC₅₀: refers to the concentration of a product in air required to cause the death of 50 percent of an animal population when inhaled by a test animal.

The key point to remember here is that the smaller the LD₅₀ or LC₅₀ number, the more lethal the substance is.

Workplace Example (MSDS with LD₅₀/LC₅₀)

Section Three: Physical Data

This section provides a physical description of the product.

Physical state: identifies the product as a gas, liquid, or solid at room temperature. This is important information for containment of the product.

Odour threshold: indicates the lowest airborne concentration of a chemical that you can smell. The ability of a worker to safely recognize the presence of a product in air, called its **warning properties**, is determined by the odour threshold and the exposure limit for the chemical. Exposure limits are maximum limits of exposure to the substance in air and are set by regulatory agencies to help protect workers from experiencing any ill health effects.

A product has **good warning properties** if you can smell the product at levels below the exposure limit and **poor warning properties** if you cannot detect it until it is above the limit.

For example, chlorine, which has an exposure limit of 200 parts per million, but may not be detected in the air until a level of 6,000 parts per million, has **poor warning properties**.

Workplace Example (Odour Threshold/Exposure Limit)

pH: The pH of a product can estimate its corrosive effects. Corrosives include acids such as muriatic acid and caustics such as sodium hydroxide. Products with a pH of < 2 or > 11.5 are corrosive.

The pH will be a number on the scale of 0 to 14, where 7 indicates neutral substance such as water. Acid has pH values less than seven and caustics have values greater than seven.

Workplace Example (pH Information)

Section Four: Fire and Explosion Data

This section provides information and procedures of particular interest to fire prevention and response personnel.

Flammability: A yes answer to flammability is followed by the conditions under which a product is flammable/combustible. For example, a highly flammable substance, such as acetone, may catch fire even in the presence of a weak source of ignition, such as a static spark, whereas a combustible substance, such as kerosene, may require the presence of a flame.

Means of extinction: provides information on extinguishers suitable for use on the burning product. Standard firefighting agents include water, water fog, foam, alcohol foam, carbon dioxide, and dry chemical.

This section also includes special firefighting procedures for unusual product hazards. For example, calcium carbide, some reactive metals, and concentrated corrosives react dangerously with water. Compressed gas cylinders may explode unless cooled. A water fog may be necessary to prevent breakage or rupturing of some containers.

Auto-ignition temperature: the lowest temperature at which a vapour or gas will self-ignite, an important consideration where gases or vapours are exposed to high temperatures or hot surfaces.

Flashpoint: the minimum temperature at which a liquid will catch fire in the presence of a source of ignition. The lower the flashpoint, the more easily the product will ignite. **Flammable liquids** such as acetone have lower flashpoints than **combustible liquids** such as kerosene.

Workplace Example (Fire and Explosion Data)

Section Five: Reactivity Data

This section provides information on product stability and the likelihood of dangerous reaction with other chemicals. If a product is not stable, this section provides information on conditions that cause instability. Some peroxides, azides, and chemicals used to produce plastics are chemically unstable and must be stored and handled with special precautions.

Incompatible substances: substances which react dangerously together. For example:

- When strong mineral acids contact caustics, large quantities of heat and mist are given off
- Sodium metal, when in contact with water, produces flammable hydrogen gas
- Oxidizers which contribute oxygen during combustion are incompatible with flammables

Workplace Example (Reactivity Data)

Section Six: Toxicological Properties

This section provides information on how materials enter the body and what the short- and long-term health effects are.

Route of entry: information on the ways substances can enter the body to cause harm and if the product will cause injury to the skin or eyes. The routes of entry are absorption through the skin, inhalation into the lungs, and ingestion or swallowing.

For example:

- Free silica, found in dust from concrete grinding, causes harm only when it is breathed into the lungs.
- Many solvents can enter the body both through breathing in vapours and absorption through the skin. Some solvents can injure the skin on contact. This information is useful in selecting personal protective equipment and developing first aid procedures.
- Worker exposure to lead often occurs through ingestion (swallowing) of particles of lead on unwashed hands while eating or smoking.

Workplace Example (Route of Entry)

Effects of acute exposure: summarizes the adverse health effects resulting from short-term exposure. For example, an acute exposure to carbon monoxide can – depending on the dose – immediately induce symptoms ranging from headache and dizziness to coma and death.

Effect of chronic exposure: Chronic exposure refers to repeated exposure over a relatively long period of time. Chronic exposure to free silica in air may cause the lung disease, silicosis, or lung cancer.

Workplace Example (Effects of Acute/Chronic Exposure)

Various kinds of adverse health effects are detailed in the remainder of the section on toxicological properties, for example:

Sensitization: the ability of a product to cause an allergic type of reaction in a person. Isocyanates, used in some automobile paints, are an example of a group of sensitizers.

Carcinogenicity: describes the cancer-causing properties of the product. For example, asbestos is a carcinogen.

Teratogenicity and embryotoxicity: related to injuries in offspring resulting from a pregnant female being exposed to the product. These injuries include malformation and death. Xylene is an example of an embryotoxin.

Mutagenicity: the capability of a substance to cause mutations in living cells.

Reproductive toxicity: refers to effects such as sterility. Ethylene glycol monomethyl ether is an example of a reproductive toxin.

Workplace Example (Adverse Health Effects)

Section Seven: Preventive Measures

This section is based in part on the information provided in previous sections. It outlines measures to protect workers during product transportation, storage, use, and disposal, as well as emergency procedures related to accidental release. **Employers must adapt this information to the specific workplace hazards and comply with the applicable occupational health and safety regulations.**

Personal protective equipment: provides information on the selection of gloves to avoid skin contact and absorption, respiratory devices for inhalation hazards, eye protection, footwear, and clothing. Suppliers must ensure this information is as specific as possible to be of real use to the employer and worker.

Workplace Example (Personal Protective Equipment)

Engineering controls: may include ventilation, process enclosure, or equipment design to control exposure to the product at the source. Ventilation system information will distinguish between local exhaust ventilation and general ventilation and may include information such as preferred fan types, duct velocities, and duct materials.

Workplace Example (Engineering Controls)

Note: Preventive measures on the MSDS are guidelines. The enforceable health and safety standards in the workplace are found in the occupational health and safety regulations which apply in your area. Employers must know those requirements and comply with them.

Leak and spill procedures: outlines protective equipment for emergency workers, control methods, and specific safety measures such as using only vacuum cleaners equipped with high efficiency filters for use with asbestos clean up.

Waste disposal information: details waste container design, safe handling procedures, and agency contacts for disposal requirements.

Workplace Example (Leak and Spill Procedures)

Handling procedures and equipment: outlines precautions required during handling of the product. The procedures must be consistent with precautionary measure detailed on the product label. For example, with strong corrosives . . . “Dilute by adding to water, NOT by adding water to the product.”

Storage requirements: provide essential information concerning storage temperature, ignition source control, separation of incompatible products, shelf life limits, testing procedures, and any special storage information. For example, picric acid must be stored underwater because it becomes explosive when dry.

Special shipping information: covers factors such as product sensitivity to shock or temperature and should provide information on TDG Class and Division.

Product Identification Number (PIN): a four-digit number which may appear on labels and placards when dangerous goods are being transported. They are of assistance to fire departments and other emergency response personnel.

Workplace Example (Discuss one of: Handling Procedures, Storage Requirements, or Special Shipping Information)

Section Eight: First Aid Measures

This section details immediate treatment of acute ill health effects. This information is meant for on-site use by first aid personnel and is consistent with, but usually more detailed than, label information. Separate procedures for inhalation, skin contact, eye contact, or swallowing will be necessary for most substances.

Information on the early warning symptoms of adverse health effects will also be of assistance here.

Workplace Example (First Aid Measures)

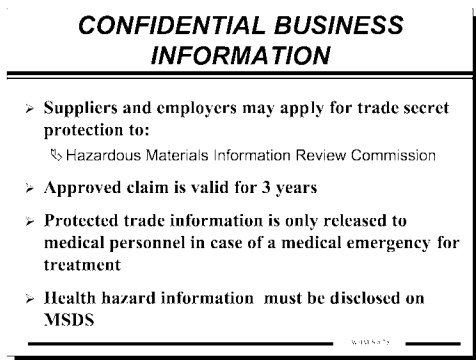
Section Nine: Preparation Information

This section is designed to ensure compliance with the requirement for the MSDS to be current and updated every three years.

Workplace Example (Preparation Information)

TRADE SECRETS

Suppliers and employers may obtain an exemption for disclosure of an ingredient on the basis of a claim for confidential business information, or “trade secret”. If so, they must provide the registration number for the claim, a statement that an exemption was granted and the decision date.



Exemptions are only granted through the approval of the Hazardous Materials Information Review Commission, established to handle applications for confidential business information. Claims will be considered only for items such as the identity of a hazardous ingredient or, in some cases, the identity of a supplier.

Exemptions are never permitted for hazard information, preventive measures, or first aid measures, and confidential business information must be released in medical emergencies. To protect workers further, there is a three-year time limit on any exemption approval, and a means of appeal of any decision by the Review Commission.

For detailed information on confidential business information, refer to the *WHMIS Core Material*.

MSDS UPDATES AND AVAILABILITY

MSDS Updates

The employer must obtain up-to-date MSDSs. However, if a supplier has gone out of business or no longer produces the controlled product and is unable to provide an updated data sheet, the employer must add any new hazard information to the MSDS on the basis of the ingredients already disclosed. Information may be available through libraries, trade publications, or computer databases.

Workplace Example (Recently Updated MSDS)

MSDS Availability

All data sheets must be made available in the workplace for use by workers and Occupational Health and Safety Committees or Representatives. The data sheets must be easily accessible during each shift in a place where a worker can study the information.

MSDS on Computer

Data sheets may be stored on computer if they are readily available to employees and at least one worker on each shift has been trained to access them.

Workplace Example (MSDS Locations at Workplace)

Note: One MSDS cannot cover all the different hazards encountered from one workplace to another. Employers must transform data sheets into an **active program** of worker instruction that may include further specific instructions and written work procedures. Employers must consult with the Health and Safety Committee or Representative to develop these materials.

MSDS Exercises

The questions and exercises are the same as those in the participant workbooks. Your copy, of course, is the only one with the answers included.

You may add further information.

Your input will contain questions and exercises related to the participants workplace situations, your lesson plans for the day, or other resource information.

This additional material is essential to the success of program delivery. The bottom line is that workers must be able to relate information from the MSDS module to situations in their workplace.

1) Where are the MSDSs kept in your workplace?

Answer: Discuss location with workers. Note that the location must provide easy access to MSDSs at all times.

2) How often must MSDS be updated?

Answer: Every three years or as soon as new information on the product is available.

3) How many items of information are provided on an MSDS?

Answer: 54.

4) Define acute and chronic exposure.

Answer: Acute exposure refers to the effects of immediate exposure to a product. Chronic exposure refers to effects of exposure over a long period of time.

5) Using an MSDS for a product in your workplace, review the hazards of the product and safe handling procedures, personal protective equipment and storage and shipping requirements for the product.

Answer: Discuss an MSDS from the workplace.

You may also wish to have the workers review the MSDS for basic compliance with WHMIS (e.g. 54 items of information, no blank sections, etc.)

Use the MSDS checklist provided on the following pages.

9-SECTION MSDS CHECKLIST

Review of 54 Items Required by *Controlled Products Regulations* (Schedule I)

Product Identifier: _____

- = information present as required
- = information inaccurate or missing
- N/AP = information not applicable
- N/AV = information not available
- [] = optional information (not required by *CPR*)

[WHMIS Class(es)]:



INFORMATION TO BE DISCLOSED ON AN MSDS

COMMENTS

SECTION 1 — Product Information

<input type="checkbox"/> Product Identifier, [WHMIS Classification]	
<input type="checkbox"/> Product Use	
<input type="checkbox"/> Manufacturer's Name, Street Address, City, Province/State, Postal/Zip Code, Emergency Telephone, [Fax Number]	
<input type="checkbox"/> Supplier's Name, Street Address, City, Province/State, Postal/Zip Code, Emergency Telephone, [Fax Number]	

SECTION 2 — Hazardous Ingredients

Hazardous Ingredients (specific)	%	CAS Number	LD ₅₀	LC ₅₀	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

SECTION 3 — Physical Data

<input type="checkbox"/> Physical State (gas, liquid, or solid)	
<input type="checkbox"/> Odour and Appearance	
<input type="checkbox"/> Odour Threshold (ppm)	

Product Identifier:

INFORMATION TO BE DISCLOSED ON AN MSDS

COMMENTS

<input type="checkbox"/> Specific Gravity	
<input type="checkbox"/> Vapour Density (air = 1)	
<input type="checkbox"/> Vapour Pressure (mmHg)	
<input type="checkbox"/> Evaporation Rate	
<input type="checkbox"/> Boiling Point (°C)	
<input type="checkbox"/> Freezing Point (°C)	
<input type="checkbox"/> pH	
<input type="checkbox"/> Coefficient of Water/Oil Distribution	

SECTION 4 — Fire and Explosion Data

<input type="checkbox"/> Conditions of Flammability	
<input type="checkbox"/> Means of Extinction	
<input type="checkbox"/> Flashpoint (°C) and Method of Determination (open-cup or closed-cup)	
<input type="checkbox"/> Upper Flammable Limit (% by volume)	
<input type="checkbox"/> Lower Flammable Limit (% by volume)	
<input type="checkbox"/> Autoignition Temperature (°C)	
<input type="checkbox"/> Explosion Data — Sensitivity to Impact	
<input type="checkbox"/> Explosion Data — Sensitivity to Static Discharge	
<input type="checkbox"/> Hazardous Combustion Products	

SECTION 5 — Reactivity Data

<input type="checkbox"/> Conditions Under which the Product is Chemically Unstable	
<input type="checkbox"/> Name of Any Substance or Class of Substance with which the Product is Incompatible	
<input type="checkbox"/> Conditions of Reactivity	
<input type="checkbox"/> Hazardous Decomposition Products	

Product Identifier:

INFORMATION TO BE DISCLOSED ON AN MSDS

COMMENTS

SECTION 6 — Toxicological Properties

<input type="checkbox"/> Routes of Entry <input type="checkbox"/> Skin Contact <input type="checkbox"/> Skin Absorption <input type="checkbox"/> Eye Contact <input type="checkbox"/> Inhalation <input type="checkbox"/> Ingestion	
<input type="checkbox"/> Effects of Acute Exposure to Product	
<input type="checkbox"/> Effects of Chronic Exposure to Product	
<input type="checkbox"/> Exposure Limits (<i>value, source, date</i>) <input type="checkbox"/> ACGIH <input type="checkbox"/> OSHA <input type="checkbox"/> Other	
<input type="checkbox"/> Irritancy of Product	
<input type="checkbox"/> Sensitization of Product	
<input type="checkbox"/> Carcinogenicity <input type="checkbox"/> IARC (<i>1, 2A, or 2B</i>) <input type="checkbox"/> ACGIH (<i>A1, A2, or A3</i>)	
<input type="checkbox"/> Reproductive Toxicity	
<input type="checkbox"/> Teratogenicity	
<input type="checkbox"/> Mutagenicity	
<input type="checkbox"/> Name of Toxicologically Synergistic Products	

SECTION 7 — Preventive Measures

<input type="checkbox"/> Specific Personal Protective Equipment <input type="checkbox"/> Gloves <input type="checkbox"/> Respirator <input type="checkbox"/> Eye <input type="checkbox"/> Footwear <input type="checkbox"/> Clothing <input type="checkbox"/> Other	
<input type="checkbox"/> Specific Engineering Controls To Be Used <input type="checkbox"/> General <input type="checkbox"/> Local Exhaust <input type="checkbox"/> Other (<i>specify</i>)	
<input type="checkbox"/> Leak and Spill Procedure	

Product Identifier:

INFORMATION TO BE DISCLOSED ON AN MSDS

COMMENTS

SECTION 7 — Preventive Measures (continued)

<input type="checkbox"/> Waste Disposal	
<input type="checkbox"/> Handling Procedures and Equipment	
<input type="checkbox"/> Storage Requirements	
<input type="checkbox"/> Special Shipping Information	
<input type="checkbox"/> PIN	

SECTION 8 — First Aid Measures

<input type="checkbox"/> Specific First Aid Measures <input type="checkbox"/> Inhalation	
<input type="checkbox"/> Ingestion	
<input type="checkbox"/> Skin Contact	
<input type="checkbox"/> Eye Contact	

SECTION 9 — Preparation Information

<input type="checkbox"/> Prepared by (<i>group, department, etc.</i>)	
<input type="checkbox"/> Telephone Number	
<input type="checkbox"/> Preparation Date (<i>original date or date of last review</i>)	



Education/Implementation

Introduction

The purpose of this module is to implement the Workplace Hazardous Materials Information System throughout your workplace, or to provide a review of your existing system.

We will discuss:

- Who will be involved in the implementation
- Outline an eight-step approach
- Talk about the important role of education and training
- Additional resources for WHMIS implementation will also be reviewed

The class will watch the “Education and Implementation” module of the video, then review the information presented in a group discussion. Following the discussion, the class will:

- Begin the development of a WHMIS program for their workplace or
- Review the existing WHMIS program

(Answer any questions, then play the video.)

Video

As part of your instructional process, you may stop the video to emphasize a point, or play it through then use it again as a step-by-step reference.

Group Discussion

The “Group Discussion” section contains an outline of the Education/Implementation video content. This will serve as a guide for you to review the material in-class and answer questions.

WHMIS PROGRAM

WHMIS Implementation and the Health and Safety Committee

The implementation of a WHMIS program requires an overall plan and steps to be taken. The Health and Safety Committee or Representative must be involved in the program development.

Note: Workers are often in the best position to know the actual problems associated with the storage, handling, and use of the product. The participation of the Health and Safety Committee or Representative will help ensure this hands-on knowledge becomes part of the instruction program.

This involvement will include consultation on:

- Development of work procedures and hazard controls for harmful substances
- Development and implementation of the program of instruction
- Annual review of the program of instruction

To implement WHMIS in your workplace, use information provided through WHMIS as well as information from the workplace.

WHMIS information is in the form of labelling and data sheets. **Other workplace information** includes a knowledge of the hazards presented when the product is being used. These hazards depend on factors such as the quantities used, work processes, and work location. An example of workplace information includes: the hazards of spray painting with a controlled product inside a confined space are far different from hand-brushing the same product in open air. Workplace information will also include other knowledge the employer has about the product, such as information from industry or trade associations, regulatory agencies, or labour organizations.

The employer must use WHMIS information (MSDS, label) and other workplace knowledge to develop written safe work procedures.

The workers must be educated about the hazards and trained in safe work procedures.

Steps to WHMIS Implementation

The program will be specific to the workplace, but the major elements of the program will be similar to the checklist.

WHMIS PROGRAM	
<input type="checkbox"/> Assign responsibility	
<input type="checkbox"/> Establish inventory of controlled products	
<input type="checkbox"/> Meet MSDS/label requirements	
<input type="checkbox"/> Determine hazards of controlled products	
<input type="checkbox"/> Establish workplace controls	
<input type="checkbox"/> Establish emergency procedures	
<input type="checkbox"/> Provide worker education and training	
<input type="checkbox"/> Evaluate WHMIS program	

Note: You may find it helpful to use the Implementation Plan Checklist provided at the back of this manual to help make sure the program is implemented.

One person should be appointed as the hazardous materials coordinator, responsible for coordinating all WHMIS requirements. This person will direct the flow of workplace and supplier information, oversee the program of worker instruction, and help ensure that follow-up and implementation occurs.

Step 1: Assign Responsibility

In a large firm, the job of hazardous materials coordinator may be a formally established position. There may also be people with specific responsibilities (i.e., shipper/receiver, instructor, etc.). The position may be less formal in a small firm. In either case, to get the job done, assign the responsibility.

Who is assigned implementation responsibilities in this organization (identify all persons)?

Step Two: Set Up an Inventory

The purpose of an inventory is to collect data on **all** substances in the workplace and to determine if they are controlled or not. Your inventory will also reveal where and how substances are used and in what quantities, as well as the amount of stock usually carried.

Note: To set up an inventory you may find it helpful to use the **Controlled Product Description and Controlled Product Inventory form provided in the Appendix.**

Resources: To help with the inventory, contact suppliers for assistance with products supplied. The Classification section of the video and print material, along with information from the *WHMIS Core Material* manual, will help you with the inventory of products produced in your firm. The Canadian Centre for Occupational Health and Safety has extensive information on many hazardous products (see *WHMIS Core Material* for address).

Who did the inventory in this workplace?

Step Three: Ensure All Labelling and MSDS Requirements are Fulfilled

With the controlled products identified, MSDS and labelling systems can then be set up.

- a) Have purchasing department or agent request data sheet from suppliers.
- b) Have shipper/receiver check the incoming labels and data sheets for compliance with WHMIS standards.
- c) Prepare Material Safety Data Sheets for controlled products produced in the workplace.
- d) Make MSDSs available to workers.
- e) Provide labelling and other means of identification for workplace storage containers, reaction vessels, and transfer systems such as piping.

The modules on the label and MSDS requirements can help with step three.

Who developed system in this workplace? (Discuss.)

Ask participants what they should do if they observe unlabelled containers in the workplace. The correct response is to report the situation to a supervisor to determine if the situation can be corrected with information already on site or whether it is necessary to store the material while actively seeking the required information.

Step Four: Determine the Hazards of Controlled Products in the Workplace

The next step is to determine the specific hazards presented by the storage, handling, and use of the products in the workplace.

Take into account:

- Physical and health hazards of the product
- Quantities
- Work processes
- Where the products are used

Who was involved? Was input from the workforce adequate? (Discuss.)

Step Five: Establish Workplace Controls

The evaluation in step four will provide the basis for establishing methods for controlling hazards in the workplace.

These controls may include:

- Ventilation
- Process modification
- Isolation of the source
- Work procedures
- Storage arrangements
- Maintenance and time scheduling

Personal protective equipment such as respirators, gloves, and protective clothing must be provided and used where necessary. Personal protective equipment, however, is meant for use only in situations where other controls are not practicable.

Discuss On-site Example

Note: You may wish to pick the area of the job site where most participants work. Have them list the products that are used, stored, or handled in that area. Ask them to rank the three most hazardous products and discuss controls for them.

Step Six: Establish Emergency Procedures

The appropriate personnel must have the required first aid resources including Material Safety Data Sheets.

- a) **First aid:** The first aid statements on labels and data sheets must be clearly understood by first aid personnel. They must be able to apply the correct first aid measures in the case of an injury caused by a controlled product.
- b) **Firefighting:** Firefighting and evacuation measures must be established and understood by all personnel who may be exposed to controlled products or who are on emergency response teams. Use periodic drills to demonstrate their understanding.
- c) **Notify firefighting departments:** Notify firefighting departments of the types of hazardous materials they may encounter in your workplace during emergency situations, and any special firefighting methods required for the hazards involved. Much of that information will be detailed on supplier MSDSs that are made available to firefighting departments.
- d) **Develop spill/accidental release procedures:** Procedures must be developed for handling spills or accidental release of controlled products. Information can be obtained from product hazard information on the data sheets and labels.

Discuss On-site Emergency Procedures

Note: It is useful to review emergency telephone numbers, locations for first aid, evacuation routes, and respirators (for gas release or fire), and the responsibility and training of an emergency response personnel. You may want to focus on one or two of the most dangerous products on-site when discussing emergency procedures.

Step Seven: Provide Worker Education and Training

With the preceding elements in place, the next step is to provide worker education, a legislated WHMIS requirement and essential to the successful implementation of WHMIS in your workplace.

EDUCATION AND TRAINING

Employers are responsible for educating workers about WHMIS and training workers in safe work procedures.

**WHO NEEDS WHMIS
EDUCATION AND TRAINING?**

- Workers who work with controlled products
- Workers who work in proximity to controlled products, including
 - ↳ management
 - ↳ supervisors, and
 - ↳ first aid/ emergency personnel

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Worker instruction: Workers will need to be instructed if they:

- a) Store, handle, use or dispose of a controlled product, or supervise workers performing those duties
- b) Work near the controlled product such that their health and safety could be at risk during normal storage, handling, use or disposal, in maintenance operations, and in emergencies.

Example: At a pulp and paper mill where bulk quantities of chlorine gas are used, it would be necessary to instruct all workers about:

- a) Recognizing the presence of chlorine, and
- b) Emergency escape procedures

More detailed instruction will be required for those working directly with the chlorine gas system.

Example: In a vehicle manufacturing or steel fabricating plant, welding rods are used only by welders and no other workers are likely to be exposed to welding fumes. Instruction will be required for welders and appropriate supervisors, as well as the first aid personnel if exposure could produce acute ill health effects.

Workforce Instruction Example

Workers selected for instruction will receive both **education** and **training**.

Education: Workers will be **educated** in how WHMIS works and the hazards of controlled products. The WHMIS video and print material are to help employers in this effort. In addition, there is specific WHMIS-related product information in the labelling and data sheets for products at your workplace.

Workplace Education Example (This course is one good example.)

WORKER TRAINING

An employer must ensure instruction in

- > specific procedures
 - ↳ for the safe use, storage, handling and disposal of a controlled product
 - ↳ to follow in case of an escape of a controlled product
 - ↳ to follow in an emergency involving a controlled product
- > safe use, storage, handling and disposal of a controlled product in transit, e.g., in a pipe

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Additional Areas for Review

WHMIS Implementation (Forms)

Forms are provided in the Appendix for assistance with your firm's implementation program.

- 1) **Controlled product description form:** to be filled out for each controlled product on site.
- 2) **Controlled product inventory:** to provide a summary list of all controlled products on site, based on information from survey forms.
- 3) **WHMIS implementation checklist:** to provide a means of checking that all phases of the program have been implemented.
- 4) **Education and training checklist:** to assist with the development, instruction, and follow-up activities of the instruction program.

Implementation Exercises

1) Why is it important to assign responsibility for implementation of the WHMIS program?

Answer: Unless responsibility is assigned, the job of implementation may not get done.

2) In what ways is the Occupational Safety and Health Committee or Representative expected to be involved in the WHMIS program of instruction?

Answer: It must be consulted regarding the initial design and implementation of the program, and when the program of instruction is reviewed annually.

3) Is watching a video WHMIS training?

Answer: No. Training is specific to the product hazards and the type of work being performed.

4) Take a product from your workplace and answer these four questions:

- What are the hazards of the product?
- How do you protect yourself?
- What do you do in the event of a spill?
- Where can you get more information?

Answer: Review the label and MSDS for a product and discuss.







Appendix

- WHMIS Classification Checklist
- Material Safety Data Sheet – 9 Sections
- 9-Section MSDS Checklist
- Controlled Product Description
- Controlled Product Inventory Checklist
- WHMIS Implementation Plan Checklist
- WHMIS Education and Training Checklist

WHMIS CLASSIFICATION CHECKLIST

Product:

CLASS A — Compressed Gas		
<i>May be located in MSDS section(s): Physical Data, Fire and Explosion Data</i>		
<input type="checkbox"/> Aerosol container — liquid	<input type="checkbox"/> Cylinder — Gas under pressure (> 40 psi)	
CLASS B — Flammable/Combustible Material		
<i>May be located in MSDS section(s): Fire and Explosion Data</i>		
<input type="checkbox"/> Class B1 — Flammable Gases: Compressed gas that forms a flammable mixture with air at a concentration of $\leq 13\%$ or concentration range $\geq 12\%$ <input type="checkbox"/> Class B2 — Flammable Liquids: Flashpoint of $< 37.8^\circ\text{C}$ (100°F) <input type="checkbox"/> Class B3 — Combustible Liquids: Flashpoint of 37.8°C – 93.3°C (100°F – 200°F) <input type="checkbox"/> Class B4 — Flammable Solids: Ignites readily, causes fires through friction/retained heat and burns with self-sustained flame <input type="checkbox"/> Class B5 — Flammable Aerosols: Aerosol container that when tested gives a flame projection at full valve opening or a flashback at any degree of valve opening <input type="checkbox"/> Class B6 — Reactive Flammable Materials: Spontaneously combusts under normal conditions or contact with air/water, or emits flammable gas if in contact with water		
CLASS C — Oxidizing Material		
<i>May be located in MSDS section(s): Reactivity Data</i>		
<input type="checkbox"/> Contributes to the combustion of another material whether or not the product itself is combustible		
<input type="checkbox"/> Organic peroxide that contains the double-bonded oxygen structure		
CLASS D — Poisonous and Infectious Material		
<i>May be located in MSDS section(s): Hazardous Ingredients, Toxicological Properties</i>		
1. Class D1: Materials Causing Immediate and Serious Toxic Effects ($\geq 1\%$) <i>Materials causing acute lethal effects</i>		
Class D1A: Very Toxic Material at $\geq 1\%$		
<input type="checkbox"/> TDG Class 2.3, TDG class 6.1, Packing group I or II		
<input type="checkbox"/> Oral Toxicity: $\text{LD}_{50} \leq 50$ mg/kg	<input type="checkbox"/> Dermal Toxicity: $\text{LD}_{50} \leq 200$ mg/kg	
<input type="checkbox"/> Inhalation Toxicity: (4 hours)	Gas Vapour Dust, mist, fumes	$\text{LC}_{50} \leq 2500$ ppm $\text{LC}_{50} \leq 1500$ ppm $\text{LC}_{50} \leq 500$ mg/m ³
Class D1B: Toxic Material at $\geq 1\%$		
<input type="checkbox"/> TDG class 6.1, Packing group III		
<input type="checkbox"/> Oral Toxicity: $\text{LD}_{50} > 50$ but ≤ 500 mg/kg	<input type="checkbox"/> Dermal Toxicity: $\text{LD}_{50} > 200$ but ≤ 1000 mg/kg	
<input type="checkbox"/> Inhalation Toxicity: (4 hours)	Gas Vapour Dust, mist, fumes	No criterion $\text{LC}_{50} > 1500$ but ≤ 2500 ppm $\text{LC}_{50} > 500$ but ≤ 2500 mg/m ³

Product:

2. Class D2: Materials Causing Other Toxic Effects		
Class D2A: Very Toxic Material at ≥ 0.1%		
<input type="checkbox"/> Carcinogenicity: IARC — group 1, 2A, or 2B ACGIH — group A1, A2, or A3		
<input type="checkbox"/> Reproductive Toxicity — Adverse effect on reproductive capability (male or female)		
<input type="checkbox"/> Teratogenicity — Birth defects in the fetus but not toxic to the pregnant mother		
<input type="checkbox"/> Embryotoxicity — Toxic effects in the fetus but not toxic to the pregnant mother		
<input type="checkbox"/> Mutagenicity — Mutations of the reproductive cells <i>in vivo</i>		
<input type="checkbox"/> Respiratory Sensitization — Allergic reaction in the respiratory tract		
Class D2A: Very Toxic Material at ≥ 1%		
<input type="checkbox"/> Chronic toxic effects in small doses — Threatens life or causes serious impairment of body organs, or cardiovascular or nervous systems		
Class D2B: Toxic Material at ≥ 1%		
<input type="checkbox"/> Chronic toxic effects in larger doses — Threatens life or causes serious impairment of body organs, or cardiovascular or nervous systems		
<input type="checkbox"/> Mutagenicity — Mutations of the non-reproductive cells		
<input type="checkbox"/> Skin Sensitization — Allergic skin reaction		
<input type="checkbox"/> Skin/Eye Irritation — Reversible damage		
3. Class D3: Biohazardous Infectious Material		
<i>May be located in MSDS section(s): Hazardous Ingredients, Toxicological Properties</i>		
<input type="checkbox"/> Organism that has been shown to cause or is reasonably believed to cause disease in persons or animals		
<input type="checkbox"/> Organisms classified into Risk Group 2, 3, and 4 as determined by the World Health Organization (WHO) or the Medical Research Council of Canada (MRCC)		
CLASS E — Corrosive Material at ≥ 1%		
<i>May be located in MSDS section(s): Hazardous Ingredients, Physical Data, Toxicological Properties</i>		
<input type="checkbox"/> pH ≤ 2.0 or pH ≥ 11.5	<input type="checkbox"/> Burns — Causes irreversible damage/necrosis of skin tissue	
<input type="checkbox"/> Corrodes SAE 1020 steel or aluminum type 7075-T6	<input type="checkbox"/> TDG Class 8 (or 2.4 for a gas)	
CLASS F — Dangerously Reactive Material		
<i>May be located in MSDS section(s): Reactivity Data</i>		
<input type="checkbox"/> Vigorous polymerization, decomposition, or condensation		
<input type="checkbox"/> Self-reactive under conditions of shock, increased pressure, or temperature		
<input type="checkbox"/> Reacts vigorously with water to release a toxic gas		

MATERIAL SAFETY DATA SHEET — 9 SECTIONS

SECTION 1 — Product Information

Product Identifier			WHMIS Classification (<i>optional</i>)		
Product Use					
Manufacturer's Name			Supplier's Name		
Street Address			Street Address		
City		Province	City		Province
Postal Code	Emergency Telephone		Postal Code	Emergency Telephone	

SECTION 2 — Hazardous Ingredients

Hazardous Ingredients (<i>specific</i>)	%	CAS Number	LD ₅₀ of Ingredient (<i>specify species and route</i>)	LC ₅₀ of Ingredient (<i>specify species</i>)

SECTION 3 — Physical Data

Physical State	Odour and Appearance		Odour Threshold (ppm)
Specific Gravity	Vapour Density (air = 1)	Vapour Pressure (mmHg)	Evaporation Rate
Boiling Point (°C)	Freezing Point (°C)	pH	Coefficient of Water/Oil Distribution

SECTION 4 — Fire and Explosion Data

Flammability <input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, under which conditions?		
Means of Extinction			
Flashpoint (°C) and Method	Upper Flammable Limit (<i>% by volume</i>)	Lower Flammable Limit (<i>% by volume</i>)	
Autoignition Temperature (°C)	Explosion Data — Sensitivity to Impact	Explosion Data — Sensitivity to Static Discharge	
Hazardous Combustion Products			

Product Identifier:

SECTION 5 — Reactivity Data

Chemical Stability <input type="checkbox"/> Yes <input type="checkbox"/> No	If no, under which conditions?
Incompatibility with Other Substances <input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, which ones?
Reactivity, and Under What Conditions?	
Hazardous Decomposition Products	

SECTION 6 — Toxicological Properties

Routes of Entry <input type="checkbox"/> Skin Contact <input type="checkbox"/> Skin Absorption <input type="checkbox"/> Eye Contact <input type="checkbox"/> Inhalation <input type="checkbox"/> Ingestion	
Effects of Acute Exposure to Product	
Effects of Chronic Exposure to Product	
Exposure Limits (<i>value, source, date</i>)	Irritancy (<i>if yes, explain</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No
Sensitization (<i>if yes, explain</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No	Carcinogenicity (<i>if yes, explain</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No
Reproductive Toxicity (<i>if yes, explain</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No	Teratogenicity (<i>if yes, explain</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No
Mutagenicity (<i>if yes, explain</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No	Synergistic Products (<i>if yes, explain</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No

SECTION 7 — Preventive Measures

Personal Protective Equipment <input type="checkbox"/> Gloves <input type="checkbox"/> Respirator <input type="checkbox"/> Eye <input type="checkbox"/> Footwear <input type="checkbox"/> Clothing <input type="checkbox"/> Other	
If checked, specify type	
Engineering Controls (<i>specify, such as ventilation, enclosed process</i>)	
Leak and Spill Procedure	
Waste Disposal	
Handling Procedures and Equipment	
Storage Requirements	
Special Shipping Information	PIN

Product Identifier:

SECTION 8 — First Aid Measures

Inhalation
Ingestion
Skin Contact
Eye Contact

SECTION 9 — Preparation Information

Prepared by (<i>group, department, etc.</i>)	Telephone Number	Preparation Date
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9-SECTION MSDS CHECKLIST

Review of 54 Items Required by *Controlled Products Regulations (Schedule I)*

Product Identifier: _____

- = information present as required
- = information inaccurate or missing
- N/AP = information not applicable
- N/AV = information not available
- [] = optional information (not required by *CPR*)

[WHMIS Class(es)]:



INFORMATION TO BE DISCLOSED ON AN MSDS

COMMENTS

SECTION 1 — Product Information

<input type="checkbox"/> Product Identifier, [WHMIS Classification]	
<input type="checkbox"/> Product Use	
<input type="checkbox"/> Manufacturer's Name, Street Address, City, Province/State, Postal/Zip Code, Emergency Telephone, [Fax Number]	
<input type="checkbox"/> Supplier's Name, Street Address, City, Province/State, Postal/Zip Code, Emergency Telephone, [Fax Number]	

SECTION 2 — Hazardous Ingredients

Hazardous Ingredients <i>(specific)</i>	%	CAS Number	LD ₅₀	LC ₅₀	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

SECTION 3 — Physical Data

<input type="checkbox"/> Physical State (gas, liquid, or solid)	
<input type="checkbox"/> Odour and Appearance	
<input type="checkbox"/> Odour Threshold (ppm)	

Product Identifier:

INFORMATION TO BE DISCLOSED ON AN MSDS

COMMENTS

<input type="checkbox"/> Specific Gravity	
<input type="checkbox"/> Vapour Density (air = 1)	
<input type="checkbox"/> Vapour Pressure (mmHg)	
<input type="checkbox"/> Evaporation Rate	
<input type="checkbox"/> Boiling Point (°C)	
<input type="checkbox"/> Freezing Point (°C)	
<input type="checkbox"/> pH	
<input type="checkbox"/> Coefficient of Water/Oil Distribution	

SECTION 4 — Fire and Explosion Data

<input type="checkbox"/> Conditions of Flammability	
<input type="checkbox"/> Means of Extinction	
<input type="checkbox"/> Flashpoint (°C) and Method of Determination (open-cup or closed-cup)	
<input type="checkbox"/> Upper Flammable Limit (% by volume)	
<input type="checkbox"/> Lower Flammable Limit (% by volume)	
<input type="checkbox"/> Autoignition Temperature (°C)	
<input type="checkbox"/> Explosion Data — Sensitivity to Impact	
<input type="checkbox"/> Explosion Data — Sensitivity to Static Discharge	
<input type="checkbox"/> Hazardous Combustion Products	

SECTION 5 — Reactivity Data

<input type="checkbox"/> Conditions Under which the Product is Chemically Unstable	
<input type="checkbox"/> Name of Any Substance or Class of Substance with which the Product is Incompatible	
<input type="checkbox"/> Conditions of Reactivity	
<input type="checkbox"/> Hazardous Decomposition Products	

Product Identifier:

INFORMATION TO BE DISCLOSED ON AN MSDS

COMMENTS

SECTION 6 — Toxicological Properties

<input type="checkbox"/> Routes of Entry <input type="checkbox"/> Skin Contact <input type="checkbox"/> Skin Absorption <input type="checkbox"/> Eye Contact <input type="checkbox"/> Inhalation <input type="checkbox"/> Ingestion	
<input type="checkbox"/> Effects of Acute Exposure to Product	
<input type="checkbox"/> Effects of Chronic Exposure to Product	
<input type="checkbox"/> Exposure Limits (<i>value, source, date</i>) <input type="checkbox"/> ACGIH <input type="checkbox"/> OSHA <input type="checkbox"/> Other	
<input type="checkbox"/> Irritancy of Product	
<input type="checkbox"/> Sensitization of Product	
<input type="checkbox"/> Carcinogenicity <input type="checkbox"/> IARC (<i>1, 2A, or 2B</i>) <input type="checkbox"/> ACGIH (<i>A1, A2, or A3</i>)	
<input type="checkbox"/> Reproductive Toxicity	
<input type="checkbox"/> Teratogenicity	
<input type="checkbox"/> Mutagenicity	
<input type="checkbox"/> Name of Toxicologically Synergistic Products	

SECTION 7 — Preventive Measures

<input type="checkbox"/> Specific Personal Protective Equipment <input type="checkbox"/> Gloves <input type="checkbox"/> Respirator <input type="checkbox"/> Eye <input type="checkbox"/> Footwear <input type="checkbox"/> Clothing <input type="checkbox"/> Other	
<input type="checkbox"/> Specific Engineering Controls To Be Used <input type="checkbox"/> General <input type="checkbox"/> Local Exhaust <input type="checkbox"/> Other (<i>specify</i>)	
<input type="checkbox"/> Leak and Spill Procedure	

Product Identifier:

INFORMATION TO BE DISCLOSED ON AN MSDS

COMMENTS

SECTION 7 — Preventive Measures (continued)

<input type="checkbox"/> Waste Disposal	
<input type="checkbox"/> Handling Procedures and Equipment	
<input type="checkbox"/> Storage Requirements	
<input type="checkbox"/> Special Shipping Information	
<input type="checkbox"/> PIN	

SECTION 8 — First Aid Measures

<input type="checkbox"/> Specific First Aid Measures <input type="checkbox"/> Inhalation	
<input type="checkbox"/> Ingestion	
<input type="checkbox"/> Skin Contact	
<input type="checkbox"/> Eye Contact	

SECTION 9 — Preparation Information

<input type="checkbox"/> Prepared by (<i>group, department, etc.</i>)	
<input type="checkbox"/> Telephone Number	
<input type="checkbox"/> Preparation Date (<i>original date or date of last review</i>)	

CONTROLLED PRODUCT DESCRIPTION

Product Name or Description	Product Code
Manufacturer's Name or Supplier's Name	
Address	
Phone Number	
Location of Product	
Quantity	
Where is it used, and how often?	
Does the product have a WHMIS Supplier Label? <input type="checkbox"/> YES <input type="checkbox"/> NO	
Information on Label	
WHMIS Class(es)	
Location of MSDS	Preparation Date of MSDS

WHMIS IMPLEMENTATION PLAN CHECKLIST

Activity	Time Needed	Assigned To	Date Completed
<p>Assign responsibility for WHMIS implementation</p> <p>1) _____</p> <p>2) _____</p> <p>3) _____</p>			
<p>Establish an inventory of controlled products</p> <p>Determine which products used or produced are classified as controlled products under WHMIS.</p>			
<p>WHMIS labels and MSDSs</p> <p>Obtain MSDSs for controlled products already in the workplace.</p>			
<p>Develop a process for requesting and receiving MSDSs for new purchases.</p>			
<p>Develop methods to store MSDSs so that they are readily available to workers.</p>			
<p>Develop a process to ensure that supplier labels are on or available for all new controlled products received.</p>			
<p>Develop a process to create and provide workplace labels and other means of identification.</p>			
<p>Determine Hazards</p> <p>Identify and evaluate the hazards of controlled products in the workplace (for example, consider the quantities to be used and stored, and the work processes where these products are used).</p>			
<p>Workplace controls</p> <p>Based on the hazard evaluation, determine where the following workplace controls may need to be established or upgraded:</p> <ul style="list-style-type: none"> • Substitution of a less hazardous product • Engineering controls such as local exhaust ventilation and process modification • Administrative controls such as work procedures and work scheduling • Personal protective equipment and clothing 			
<p>Integrate these controls into the overall health and safety program.</p>			
<p>Emergency procedures</p> <p>Review first aid procedures and upgrade them if required.</p>			
<p>Review spill control procedures and upgrade them if required.</p>			
<p>Review firefighting procedures and upgrade them if required.</p>			
<p>Notify the local fire department of the location, types, and quantities of controlled products used and stored.</p>			
<p>Worker education and training</p> <p>Complete WHMIS Education and Training Checklist.</p>			
<p>Evaluate WHMIS program</p> <p>Establish periodic review process for the following:</p> <ul style="list-style-type: none"> • Check to ensure that no MSDS is more than three years old. • Check that all items on the MSDS have been completed. • Check the condition and presence of labels for all controlled products. • Monitor workplace controls to ensure they are effective. • Review the WHMIS education and training program. 			

WHMIS EDUCATION AND TRAINING CHECKLIST

Activity	Assigned To (initials)	Date Completed
Development		
Consult the occupational health and safety committee or worker representative on the development, implementation, and review of the program.		
Identify all controlled products used in the workplace.		
Evaluate the hazards of each controlled product.		
Identify WHMIS instructors, from either internal or external sources.		
Train instructors (if internal), or evaluate their qualifications (if external).		
Identify employees to be instructed — those who work with or near controlled products.		
Establish a process to identify new employees and contractors who require instruction.		
Evaluate labels and MSDSs to be used in the education program (check for clarity, accuracy, and completeness).		
Evaluate safe work and emergency procedures to be used in education and training program.		
Instruction		
Provide a general introduction to WHMIS (for example, discuss responsibilities, labels, and MSDSs).		
Provide instruction on how to identify controlled products.		
Provide instruction on control measures and safe work procedures.		
Provide instruction on emergency procedures.		
Provide instruction on accessing information on controlled products.		
Evaluate the need for additional or specialized instruction to workers (for example, to those with language or learning difficulties) and provide this instruction where required.		
Provide instruction to workers whenever new products are received or new hazard information becomes available.		
Follow-up activities		
Evaluate workers' understanding of WHMIS, and provide further education and training as required.		
Review the effectiveness of the education and training program at least once a year. (Reviews must be done in consultation with the occupational health and safety committee or worker representative.)		

SECTION 6 - TOXICOLOGICAL PROPERTIES

Product Identifier: Acetone

Route of Entry: Skin Contact Skin Absorption Eye Contact Inhalation Ingestion

Effects of Acute Exposure to Product: Irritation; possible effects on central nervous system (CNS); at air concentrations above 8,000 ppm may cause drowsiness, incoordination, loss of reflexes, unconsciousness, and respiratory failure

Effects of Chronic Exposure to Product: Dermatitis. No significant harmful effects from oral or inhalation exposures.

Exposure Limits (value, source, date): 250 ppm, 8-hour exposure limit (WCB)

Sensitization (if yes, explain): Yes No

Reproductive Toxicity (if yes, explain): Yes No

Mutagenicity (if yes, explain): Yes No

Irritancy (if yes, explain): Yes No Severe eye irritant, skin and respiratory irritant

Carcinogenicity (if yes, explain): Yes No

Teratogenicity (if yes, explain): Yes No

Synergistic Products (if yes, explain): Yes No Chlorinated solvents, ethyl alcohol

SECTION 7 - PREVENTIVE MEASURES

Personal Protective Equipment: Eye Footwear Clothing Other

If checked, specify type: Gloves Respirator

Engineering Controls (specify, such as ventilation, enclosed process): Use mechanical ventilation to reduce exposure. Use non-sparking and grounded ventilation system.

Spill Procedure: Eliminate all ignition sources. Wear adequate protective equipment. Contain spill with absorbent material and place in a suitable covered and labelled container for disposal.

Disposal: Check with federal, provincial, and local government requirements for disposal.

SECTION 2 - HAZARDOUS INGREDIENTS

Product Name: Solvent

Product Use: Solvent

Manufacturer: Gase

Street Address: Gase

City: Gase

Postal Code: Gase