

Lesson At A Glance

Length	1 hour
Learning Objectives	<p>Students will:</p> <ul style="list-style-type: none"> • explain what WHMIS stands for • recognize WHMIS symbols and classes • identify safety rules in the science classroom
Teaching Strategies	<ul style="list-style-type: none"> • in-class discussion • personal reflection • critical thinking • questioning • cooperative groups
Equipment/Instructional Aids	<ul style="list-style-type: none"> • flipchart/whiteboard • Student Handouts (photocopy for students) • optional: WHMIS booklet and cards (order from WCB)
Assessment Strategy	<ul style="list-style-type: none"> • presentation • WHMIS worksheets

Lesson Breakdown

10 min.	Introductory Activity - What does "WHMIS" stand for?
25 min.	Learning Activity - WHMIS Symbols
20 min.	Group Learning Activity - Safety in the Science Classroom
5 min.	Conclusion

Purpose

This module is designed to introduce students to the WHMIS classifications for hazardous substances. Although students should take responsibility for recognizing labels, the employer is ultimately responsible for training. This lesson stresses..."If You Don't Know...Ask."

Learning Objectives

Students will be able to:

- explain what WHMIS stands for
- recognize WHMIS symbols and classes
- identify safety rules in the science classroom

Duration

1 hour

Instructional Materials

Student Handouts

(photocopy for students)

1. What is this thing called "WHMIS"
2. WHMIS Symbols (5 pages) &
3. WHMIS and Safety Worksheet (2 pages)
4. Safety in the Science Classroom
5. Safety in the Science Classroom Exercise

WHMIS Booklet & Cards

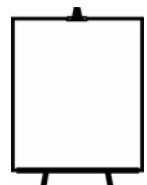
(optional)

1. WHMIS At Work Booklet
2. WHMIS Cards

Order from WCB's
Publications & Videos
(604)276-3068 or
1-800-661-2112 loc 3068 or
visit www.worksafebc.com

Equipment

1. White board or flipchart and paper
2. Markers



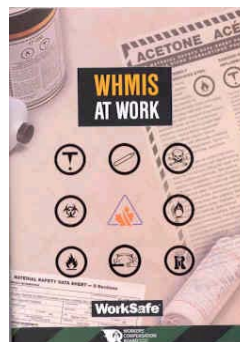
Note to Teacher

WHMIS is a federal Canadian regulation which applies to products used in Canadian workplaces, therefore it is essential that youth joining the workforce understand this classification system of hazardous materials and substances.

The activities in this module help students to focus on:

- safe handling of materials and substances
- safe storage of materials and substances
- safe clean-up of materials and substances
- using personal protective

Refer to WCB's WHMIS At Work Booklet for more information.



Introduction - 15 min.

Comment

WHMIS is a federal Canadian regulation which applies to products used in Canadian workplaces.

Ask

What does WHMIS stand for?

Explain

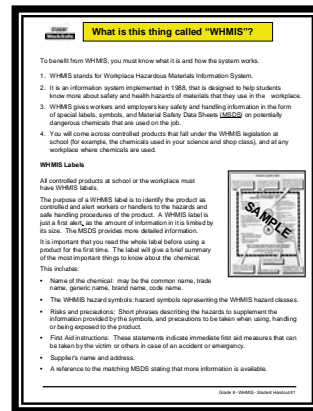
WHMIS stands for Workplace Hazardous Materials Information System. It is an information system designed to help students know more about safety and health hazards of materials that they use in the workplace.

WHMIS gives workers and employers key safety and handling information in the form of special labels, symbols and Material Safety Data Sheets (MSDS) on potentially dangerous chemicals that are used on the job.

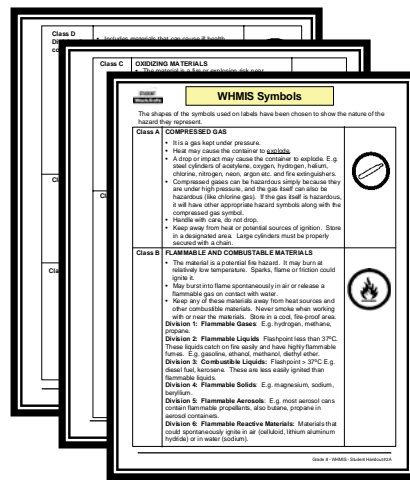
Introduction - continued

Distribute Student Handout #1- What is this thing called “WHMIS”?

Discuss contents of handout.



Distribute Student Handout #2A to 2E. Briefly review with class.



Show examples of items that contain a WHMIS label that may be kept in your classroom.

If no items in the classroom, either bring items from home or refer to the WHMIS AT WORK booklet.



Introduction - continued

Optional: Distribute WCB's WHMIS cards and booklets to students.



WHMIS MATERIALS FREE

- WHMIS Wallet Cards
- WHMIS Poster
- WHMIS At Work Booklet

To order call:
Publications & Videos Section
Workers' Compensation Board
of B.C.

Telephone: 604 276-3068
Toll Free: 1 800 661-2212,
local 3068
Fax: 604 279-7406
E-mail: pubvid@wcb.bc.ca

Ask

What hazardous chemicals you have used either at home, school, or work?

Have you ever been injured or know of someone who has been injured by a hazardous chemical?

Why is knowledge and training in hazardous substances so important?



Elicit responses from students. Record responses on flipchart.

Comment

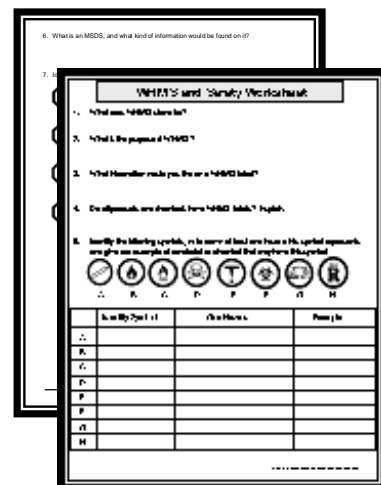
At the worksite employers are required by WCB regulations to provide instruction for workers using hazardous materials. Also, if hazardous contents are transferred to a new container, workplace labeling must be used.

This is called WHMIS.

WHMIS Symbols Learning Activity - 25 min.

Distribute Student Handouts 3A and 3B to students. Have students complete the WHMIS worksheets.

Review answers to worksheets with students.



WHMIS and Safety Worksheet - Answer Key

1. What does WHMIS stand for? **Workplace Hazardous Materials Information System**
2. What is the purpose of WHMIS?
It is an information system in the form of special labels, symbols, and Material Safety Data Sheets (MSDS) for potentially dangerous chemicals used on the job
3. What information would you find on a WHMIS label?
Name of the chemical, the WHMIS hazard symbols, risks and precautions, first aid instructions, supplier's name and address, a reference to the matching MSDS
4. Do all products and chemicals have WHMIS labels? Explain.
No, some products, like pesticides and many household products, are covered by other legislation, and will have other label (e.g. international hazards symbols)
5. Identify the following symbols, write down at least one hazard this symbol represents and give one example of a material or chemical that may have this symbol.



	Identify Symbol	One Hazard	Example
A	Compressed Gas	could explode if heated	helium , hydrogen
B	Flammable & combustible materials	could cause a fire	gasoline, ether

WHMIS and Safety Worksheet - Answer Key (continued)

C	Oxidizing materials	could cause flammable material to burn	chlorine, bleach, peroxide
D	Poisonous & infectious material - Division 1	could cause immediate, serious/fatal toxic effects	potassium cyanide, carbon monoxide
E	Poisonous & infectious material - Division 2	cause toxic effects	cancer, sterility, benzene, asbestos
F	Poisonous & infectious material - Division 3	biohazardous infectious material, transmission of a disease	hepatitis B, AIDS, fungi, viruses
G	Corrosive material	serious chemical burns, lung damage from inhaling fumes	sulfuric acid, chlorine gas
H	Dangerously reactive material	could have a dangerous reaction with water	calcium carbide

6. What is an MSDS, and what kind of information would be found on it?

- **An MSDS is a sheet that gives more detailed technical information about the product: product information, which hazardous ingredients are in the product, physical data, fire and explosive hazards, reactivity data, toxicological properties, preventive measures, first aid measures, when it was made and who to contact**

7. Identify the following International Safety Symbols.



A



B



C



D



E



F



G



H



I



J



K



L

A Danger Poison

B Warning Poison

C Caution Poison

D Danger Flammable

E Warning Flammable

F Caution Flammable

G Danger Explosive

H Warning Explosive

I Caution Explosive

J Danger Corrosive

K Warning Corrosive

L Caution Corrosive

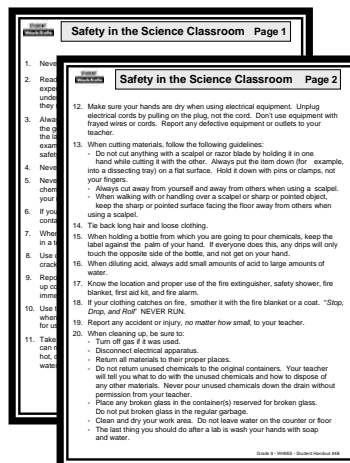
Group Learning Activity - 20 min.

Comment

When we think about hazards in our classroom or at work, we do not always think about hazardous materials and substances. If we come upon a spill, we often think about the necessity to clean it up so that no one will slip and fall but we do not always ask ourselves “What is this substance?” or “Is this substance toxic and could it harm me if I come into contact with it?”.

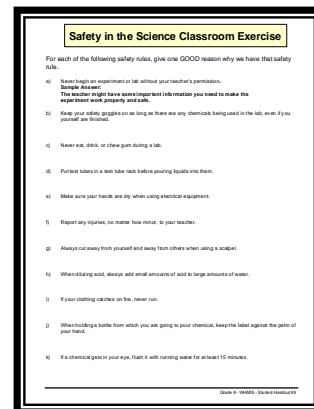
Distribute Student Handout #4A and 4B.

Divide students into groups of 2 to 3.



Distribute Student Handout #5 to each group and have each brainstorm to answer each of the questions.

Facilitate group activities. Have each group present 2 or more answers to the questions on Student Handout #5. Answer Key on following page.



Safety in the Science Classroom - Answer Key

For each of the following safety rules, give one GOOD reason why we have that safety rule.

- a) Never begin an experiment or lab without your teacher's permission.
Sample Answer:
The teacher might have some important information you need to make the experiment work properly and safe.
- b) Keep your safety goggles on as long as there are any chemicals being used in the lab, even if you yourself are finished.
A classmate still completing the lab might spill chemicals on you.
- c) Never eat, drink, or chew gum during a lab.
Chemicals or biohazardous materials could be swallowed accidentally and poisonous substances could get on your fingers while eating.
- d) Put test tubes in a test tube rack before pouring liquids into them.
The test tube will be held more steadily so there will be less chance that a spill will occur and since you are not holding the test tube, there will be less chance of the chemical spilling on you.
- e) Make sure your hands are dry when using electrical equipment.
Water on hands could conduct electricity into your body if there is short circuit in the electrical device.
- f) Report any injuries, no matter how minor, to your teacher.
The teacher should know so that he or she can correct a potentially hazardous situation and you will be protected if complications arise later on from the injury (e.g. infection).
- g) Always cut away from yourself and away from others when using a scalpel.
If you cut toward yourself, the scalpel could suddenly slip and you could severely cut yourself.
- h) When diluting acid, always add small amounts of acid to large amounts of water.
If you add water to a large amount of acid, the water could react with the acid even to the point of causing the glassware to break or an explosion to occur.
- i) If your clothing catches on fire, never run.
Running will fan the flames causing them to spread faster. Therefore, stop, drop, roll or smother the flames with a blanket.
- j) When holding a bottle from which you are going to pour chemical, keep the label against the palm of your hand.
If everyone does this, there will never be chemicals dipped or spilled onto the label of the bottle and therefore, when your skin touches the label, it won't come into contact with any chemicals.
- k) If a chemical gets in your eye, flush it with running water for at least 15 minutes.
Chemicals absorbed deep into the eye will only be drawn to the surface and flushed out by washing it with flowing water for at least 15 minutes.

Conclusion - 5 min.

Comment

When you get a job, your employer has responsibilities to ensure your safety. Your employer must ensure that all equipment and materials (such as cleaning chemicals) are properly handled, stored and maintained and must teach you how to store, handle, use and dispose of any controlled material.

Remember, before you use an unknown substance, you have the right to know what it is and the responsibility to find out how to use it.

