

SNC2D CHEMISTRY

CHEMICAL REACTIONS

☛ Hazardous Chemicals (P.511)

Hazardous Chemicals

Matter includes both helpful and harmful solids, liquids, and gases. For example, oxygen is a gas that all animals must take in to survive, but nitrogen dioxide gas from car exhaust is poisonous. How do we know whether or not a given substance is safe to use? How do we work safely with any chemical in the laboratory, at home, or at work?



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Hazardous Chemicals

One source of information about hazardous substances is the warning symbols that are placed on containers of potentially dangerous materials.

HAZARDOUS CHEMICALS

- ✦ can be:
 - poisonous (toxic)
 - flammable
 - explosive
 - corrosive (reactive)



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Hazardous Chemicals

PRACTICE

- How can hazardous chemicals enter your body? (5 ways)

- inhalation
- ingestion
- injection
- skin contact
- eye contact



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Hazardous Chemicals – HHPS

The Hazardous Household Products Symbols (HHPS) on consumer products specify both the nature and the degree of any hazard. Each symbol is made up of a picture and a frame. The picture tells you the type of danger. The frame tells you whether it is the contents (octagon) or the container (triangle) that poses that hazard.

	poisonous	flammable	explosive	corrosive
danger				
warning				
caution				

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Hazardous Chemicals – WHMIS




The Workplace Hazardous Materials Information System (WHMIS) provides workers and students with complete and accurate information about hazardous products. Clear and standardized labels must be present on the product's container. If the material is hazardous, the label will include one or more of the following WHMIS symbols.

	compressed gas		dangerously reactive material
	flammable and combustible material		biohazardous infectious material
	oxidizing material		poisonous and infectious material causing immediate and serious toxic effects
	corrosive material		poisonous and infectious material causing other toxic effects

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Hazardous Chemicals – MSDS

*In Canada, manufacturers of all hazardous products used in workplaces, including schools, must provide information sheets about their products. The Material Safety Data Sheets (**MSDS**) identifies the chemical and physical hazards associated with each substance. It also includes physical data, toxicity, health effects, first aid, and spill cleanup procedures.*

Material Safety Data Sheet			
NFPA Classification Health: 2 Environment: 2 Specific Hazard: 2	DOT / TDG Placards 	WHMIS Classification 	PROTECTIVE CLOTHING 
Section I. Chemical Product and Company Identification			
PRODUCT NAME: Sulfuric Acid		MSDS NUMBER:	
SYNONYM: Oil of vitriol, Dipping acid, Sulphuric acid		REVISION NUMBER:	
CHEMICAL NAME: Sulfuric acid		MSDS prepared by: Environment, Health and Safety Department on:	
CHEMICAL FAMILY: Inorganic acid		24 HR EMERGENCY TELEPHONE NUMBER:	
CHEMICAL FORMULA: H ₂ SO ₄			
MATERIAL USES: Agricultural use; Manufacture of chemical products; Industrial applications; Manufacture of inorganic products.			

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Hazardous Chemicals

SAFETY SYMBOLS

- ❖ indicate why and to what degree a product is dangerous
- ❖ variety of symbols
 - ① HHPS EH Hazardous Household Product Symbols
 - ② WHMIS EH Workplace Hazardous Materials Information System
 - ③ MSDS EH Materials Safety Data Sheet


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✓ Check Your Learning

1. Which of the two warning systems do you think is more effective?

answers will vary


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 **Check Your Learning**

2. Why is it necessary to have a system like WHMIS in the workplace?
How does it benefit the employee? Employer?

so people will know exactly why and to what degree a product is dangerous


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 **Check Your Learning**

3. In what way are household wastes hazardous? Which type of hazard do you think is posed by the largest number of products?

can enter water and food sources – poisonous

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 **Check Your Learning**

4. Think about safety precautions that are taken in different industries.

- (a) Why do people wear face masks when spraying a car?
- (b) Why do hairdressers wear gloves when using chemicals to straighten hair?
- (c) Why do firefighters wear breathing apparatus when entering a burning building?

(a) to prevent inhalation of dangerous fumes/particles
(b) to prevent skin contact with dangerous chemicals
(c) to prevent inhalation of dangerous fumes/particles

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