Hazard Identification Systems

Whether at home or in the work place, we use chemicals everyday that can be potentially harmful to us if used incorrectly. Correctly identifying what these hazards are is essential to the safe use of these products. There are three methods of identifying hazardous materials that you need to be aware of.

**Workplace Hazardous Materials Information System (WHMIS)**

WHMIS is Canada’s national system for identifying hazardous materials. This system uses a set of eight symbols to designate different classes of hazardous materials. It is the common type of safety labeling used in all industries and government worksites as mandated by federal regulations.

Atypical label for a container looks like:



The “Risk Phrases” and “Precautionary Measures” are also standardized and come from a common databank. This ensures that all people understand the associated risks of the product regardless of where in Canada they live or move to.

In addition to the WHMIS labels, a place of business must also keep a Material Safety Data Sheet (MSDS) for each hazardous product that they keep on site. The MSDS for a chemical includes all of the pertinent information, such as chemical makeup, supplier name, first aid measures, and safety precautions.

**WHMIS Symbols**

|  |  |
| --- | --- |
| /i/whmis/Symbols&Labels/SymbolA_sm.gif (1883 bytes) | **CLASS A: COMPRESSED GAS**This class includes compressed gases, dissolved gases, and gases liquefied by compression or refrigeration.  |
| /i/whmis/Symbols&Labels/SYMBOLB_SM.GIF (1999 BYTES) | **CLASS B: FLAMMABLE AND COMBUSTIBLE MATERIAL**This class includes solids, liquids, and gases capable of catching fire in the presence of a spark or open flame under normal working conditions.  |
| /i/whmis/Symbols&Labels/SymbolC_sm.gif (1995 bytes) | **CLASS C: OXIDIZING MATERIAL**These materials increase the risk of fire if they come in contact with flammable or combustible materials. |
| /i/whmis/Symbols&Labels/SymbolD1_sm.gif (2478 bytes) | **CLASS D: POISONOUS AND INFECTIOUS MATERIAL****Division 1: Materials Causing Immediate and Serious Toxic Effects**These materials can cause death or immediate injury when a person is exposed to small amounts. Examples: sodium cyanide, hydrogen sulphide |
| /i/whmis/Symbols&Labels/SymbolD2_sm.gif (1680 bytes) | **CLASS D: POISONOUS AND INFECTIOUS MATERIAL****Division 2: Materials Causing Other Toxic EFFECTS**These materials can cause life-threatening and serious long-term health problems as well as less severe but immediate reactions in a person who is repeatedly exposed to small amounts.  |
| /i/whmis/Symbols&Labels/SYMBOLD3_SM.GIF (2172 BYTES) | **CLASS D: POISONOUS AND INFECTIOUS MATERIAL****Division 3: Biohazardous Infectious MATERIAL**These materials contain harmful micro-organisms that have been classified into Risk Groups 2, 3, and 4 as determined by the World Health Organization (WHO) or the Medical Research Council of Canada. |
| /i/whmis/Symbols&Labels/SymbolE_sm.gif (2532 bytes) | **CLASS E: CORROSIVE MATERIAL**This class includes caustic and acid materials that can destroy the skin or eat through metals. Examples: sodium hydroxide, hydrochloric acid, nitric acid |
| /i/whmis/Symbols&Labels/SymbolF_sm.gif (2330 bytes) | **CLASS F: DANGEROUSLY REACTIVE MATERIAL**These products may self-react dangerously (for example, they may explode) upon standing or when exposed to physical shock or to increased pressure or temperature, or they emit toxic gases when exposed to water. |

**Hazard Identification System (HIS)**

This system uses a colour-coded set of four boxes arranged either as a diamond or as a large box. Three of the boxes are colour-coded for health (blue), flammability (red) and yellow (reactivity), and use a number scale (0-4) to indicate the hazard level. The fourth box is left white and indicates other potential hazards not covered by the other three boxes.

**Fire Hazard (Red)**

# F

**Reactivity Hazard (Yellow)**

**Health Hazard (Blue)**

**R**

**H**

#####  SC

## Specific Hazard

### Health (Blue)

4 Can cause death or major injury despite medical treatment.

3 Can cause serious injury despite medical treatment.

2 Can cause injury; requires prompt treatment.

1 Can cause irritation if not treated.

0 No hazard.

#### Fire (Red)

4 Very flammable gases or very volatile flammable liquids.

3 Can be ignited at all normal temperatures.

2 Ignites if moderately heated.

1 Ignites after considerable preheating.

0 Will not burn

#### Reactivity / Stability (Yellow)

4 Readily detonates or explodes.

3 Can detonate or explode, but requires a strong initiating force or heating under confinement.

2 Normally unstable but will not detonate.

1 Normally stable; unstable at high temperature and pressure; reacts with water.

0 Normally stable; not reactive with water.

## Special Comments (White)

C May be carcinogenic with chronic exposure.

SC Suspected carcinogen.

Exp Risk of explosion.

~~W~~ Reacts with water.

Cor Corrosive.

Oxy Oxidizing agent.

T Toxic.

Pol Polymerizes under normal conditions.

**Household Hazardous Products Symbols (HHPS)**

This system uses a set of four symbols and two borders to identify a potential danger from either the container or the contents.

|  |  |  |  |
| --- | --- | --- | --- |
| C:\Documents and Settings\mhunter\Desktop\poisonous.jpg | C:\Documents and Settings\mhunter\Desktop\flammable.jpg | C:\Documents and Settings\mhunter\Desktop\explosive.jpg | C:\Documents and Settings\mhunter\Desktop\corrosive.jpg |
| Poisonous | Flammable | Explosive | Corrosive |
|  |  |  |  |
|  |  |
| Danger posed by container. | Danger posed by contents. |

On many household products, you may see the following combinations.

|  |  |  |
| --- | --- | --- |
| **Symbol** | **The Danger** | **Product Example** |
| C:\Documents and Settings\mhunter\Desktop\small_explosive.gif | This **container** can explode if it is heated or punctured. Flying pieces of metal or plastic can cause serious injuries, especially to the eyes. | Chemicals in aerosol containers such as hairspray, deodorant sprays, and spray paint. |
| C:\Documents and Settings\mhunter\Desktop\small_corosive.gif | This **product** is corrosive. It will burn skin or eyes on contact, or throat and stomach if swallowed. | Strong cleaners such as toilet bowl and oven cleaner. |
| C:\Documents and Settings\mhunter\Desktop\small_flammable.gif | This **product** is flammable. It, or its fumes, will catch fire easily if it is near heat, flames or sparks. | Products such as gasoline and adhesives. |
| C:\Documents and Settings\mhunter\Desktop\small_poison.gif | This **product** is poisonous. Licking, eating, drinking, or sometimes smelling this product will cause illness or death. | Products such as windshield washer fluid and furniture polish. |

**Name:**

**Hazardous Identification Systems**

**Worksheet**

Identify the hazards associated with each of the following symbols.

|  |  |  |
| --- | --- | --- |
| 1. | C:\Documents and Settings\mhunter\Desktop\small_corosive.gif | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 2. | C:\Documents and Settings\mhunter\Desktop\small_poison.gif | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 3. | /i/whmis/Symbols&Labels/SYMBOLB_SM.GIF (1999 BYTES) | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 4. | C:\Documents and Settings\mhunter\Desktop\Yield.bmp | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 5. | C:\Documents and Settings\mhunter\Desktop\small_explosive.gif | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 6. | /i/whmis/Symbols&Labels/SymbolD1_sm.gif (2478 bytes) | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 7. | /i/whmis/Symbols&Labels/SymbolE_sm.gif (2532 bytes) | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 8. |  2 3 1  ~~W~~ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |