University of Windsor

WHMIS 2015 PICTOGRAMS & CLASSIFICATION

PHYSICAL HAZARD CLASSES	
Gas Cylinder 	**Hazard Class** • Gas Under Pressure This class includes compressed gases, dissolved gases, and gases liquefied by compression or refrigeration. ***U of W Examples:*** propane, compressed air, carbon dioxide (fire extinguishers), nitrogen, welding gases **Handling instructions:** Handle with care, do not drop cylinder. Keep cylinder away from potential ignition sources. Store containers in designated areas.
Flame 	**Hazard Classes** • Flammables • Pyrophorics • Self-Heating • Emits Flammable gas • Self-Reactive • Organic Peroxides These classes include solids, liquids, and gases capable of catching fire in the presence of a spark or open flame under normal working conditions. Pyrophorics can readily ignite when exposed to air. Self-heating - can decompose slowly and may become hot when exposed to air. They may catch fire. Products that react with water to give off a gas that is flammable. Self-reactive chemicals & organic peroxides may cause fire and explosion. ***U of W Examples:*** spray paint, gasoline, propane, alcohols, acetone, sodium, toluene, Grignard reagents **Handling instructions:** Design experiments/apparatus such that strict control can be maintained over the temperature of the reaction vessel. Keep away from heat sources and other combustible materials. Never smoke around materials. Store in a cool, fire-proof area.
Flame Over Circle 	**Hazard Class** • Oxidizers This class includes materials that do not usually burn by themselves, but they will increase the risk of fire or the intensity of a fire if they come in contact with flammable or combustible materials, or cause materials that normally do not burn to suddenly catch on fire. ***U of W Examples:*** hydrogen peroxide, oxygen gas, bleach, nitric acid, potassium permanganate **Handling instructions:** Keep away from combustible materials & store in designated area. Keep away from sources of ignition. Never smoke around materials. Wear personal protective equipment (PPE).
Corrosion 	**Hazard Classes** • Skin Corrosion/Burns • Eye Damage • Corrosive to Metals These classes include materials that can damage or destroy metals. When a corrosive material eats through a container, the contents may spill out into the workplace resulting in health effects, reactivity or fire damage. ***U of W Examples:*** sodium hydroxide, hydrochloric acid, nitric acid, hydrofluoric acid, sulfuric acid, caustic soda, ammonium hydroxide, cleaners & disinfectants (i.e. Tilex). **Handling instructions:** Keep containers tightly closed. Avoid skin & eye contact by wearing personal protective equipment (PPE). Avoid inhaling – use in well-vented area and/or wear personal protective equipment (PPE).
Exploding Bomb 	**Hazard Classes** • Explosives • Self-Reactive • Organic Peroxides These classes include materials that may be explosive, flammable, or both. Self-reactive substances and mixtures are unstable materials that can cause or increase the intensity of a fire. Many organic peroxides are unstable and may be highly reactive or explosive. ***U of W Examples:*** peroxide, hydrogen cyanide, benzoyl peroxide, nitroglycerine, picric acid **Handling instructions**: Design experiments/apparatus such that strict control can be maintained. If the reaction can be violent, use barriers Handle with extreme caution. Wear personal protective equipment (PPE), These materials require specific storage. Prepare SOP when working with these materials.

University of Windsor

WHMIS 2015 PICTOGRAMS & CLASSIFICATION

HEALTH HAZARD CLASSES	
Skull and Crossbones 	**Hazard Class** • Acute Toxicity (Fatal or Toxic) This class includes materials that can cause death or immediate injury with short exposure to small amounts. Products that are fatal, toxic or harmful if inhaled, following skin contact, or if swallowed. Acute toxicity refers to effects occurring following skin contact or ingestion exposure to a single dose, or multiple doses given within 24 hours, or an inhalation exposure of 4 hours. Acute toxicity could result from exposure to the product itself, or to a product that, upon contact with water, releases a gaseous substance that is able to cause acute toxicity. ***U of W Examples:*** antifreeze, sodium cyanide, hydrogen sulphide, sulfuric acid, carbon monoxide, acrylonitrile **Handling instructions:** Handle with extreme caution. Wear personal protective equipment, avoid contact with skin and eyes. Avoid inhaling, work in well-vented areas or wear respiratory protection equipment.
Exclamation Mark 	**Hazard Classes** • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non- Mandatory) These classes include materials that are harmful if swallowed, harmful in contact with skin, harmful if inhaled. Causes serious eye and skin irritation. May cause an allergic skin reaction, may cause respiratory irritation, may cause drowsiness or dizziness. Hazardous to Ozone Layer. ***U of W Examples:*** ethyl ether, hydrogen peroxide, caffeine, xylene **Handling instructions:** These materials are considered "irritants" and should be handled with care. Wear personal protective equipment, avoid contact with skin and eyes. Avoid inhaling, work in well-vented areas or wear respiratory protection equipment.
Health Hazard 	**Hazard Classes** • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity These classes include materials that may be fatal if swallowed and/or enters the airways – aspiration hazard. May cause or are suspected of causing cancer. May cause or are suspected of causing genetic defects. Mutations can lead to birth defects or cancer. May cause allergy or asthma symptoms, or breathing difficulties if inhaled. (Skin sensitization uses the exclamation mark pictogram) Causes or may cause damage to organs through repeated or prolonged exposure. Causes are specific but not fatal, target organ toxicity (non-lethal damage to organs) that occurs from a single exposure only. ***U of W Examples:*** asbestos, benzene, formaldehyde, xylene, calcium chloride, mercury. **Handling instructions:** Handle with extreme caution in the fume hood. Wear personal protective equipment (PPE), avoid contact with skin and eyes. Avoid inhaling, work in well-vented areas or wear respiratory protection equipment. Establish cleaning and decontamination procedures. Prepare Standard Operating Procedure (SOP) when working with these materials.
Biohazard 	**Hazard Class** • Biohazardous Infectious MATERIAL This class includes materials that contain harmful micro-organisms that are believed to cause disease and have been classified into Risk Groups 1, 2, 3, and 4 as determined by the World Health Organization (WHO) or the Medical Research Council of Canada. ***U of W Examples:*** Cholera toxin, toxoplasma gondii, human carcinoma cell lines. **Handling instructions:** Take every measure to avoid contamination. Handle material only when fully protected. Handle materials in designated areas only. Establish cleaning and decontamination procedures.

ENVIRONMENTAL HAZARD CLASSES – not adopted by WHMIS 2015. You may see the environmental hazard listed on labels and Safety Data Sheets (SDS).

Environment (Non- Mandatory)	**Hazard Class**
	• Aquatic Toxicity This class includes materials that can cause death or immediate injury when a person is exposed to small amounts. ***U of W Examples:*** hexane, xylene, cyanogen bromide, bromocyclohexane **Handling instructions:** Handle with caution. Wear personal protective equipment (PPE), avoid spills. Do not allow material to contaminate ground water system. Avoid inhaling, work in well-vented areas or wear respiratory protection equipment.