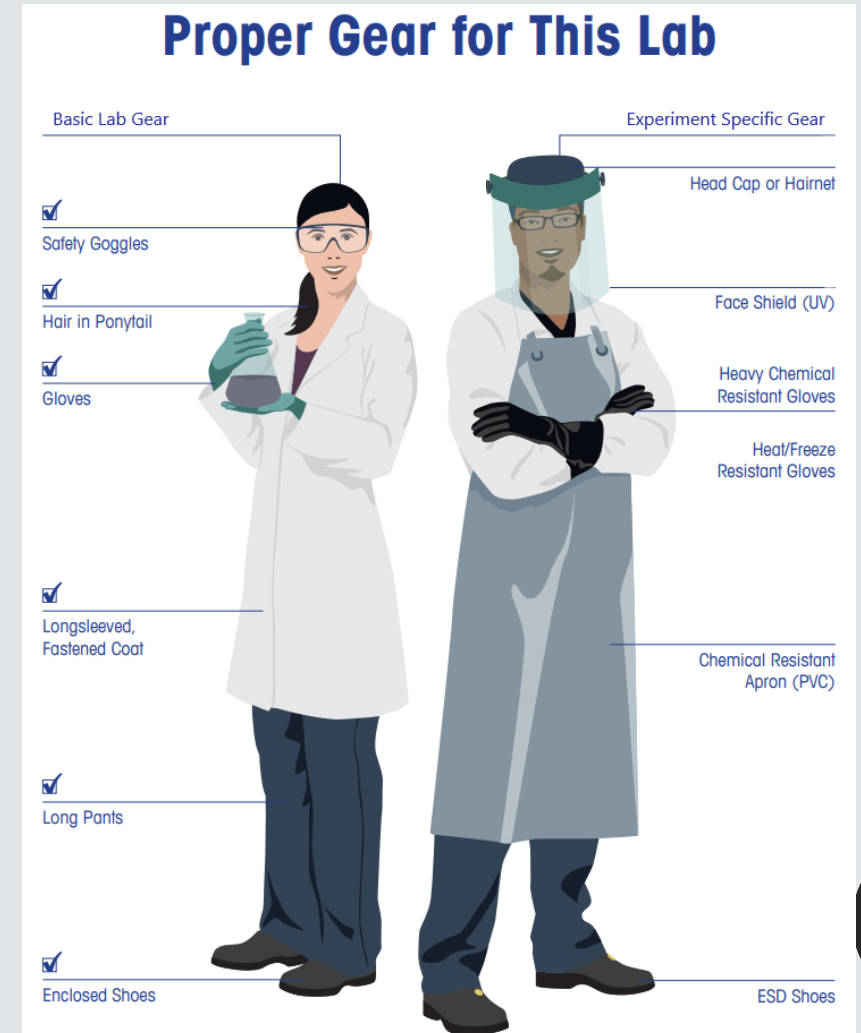




LG1 Chemistry Safety

Safety Gear and Lab Behaviour

- Always wear the proper safety gear (see the picture). Protective safety equipment is called Personal Protective Equipment (PPE)
- Your regular glasses are not chemical resistant. You must still wear safety goggles on top of them.
- At no point should you take the safety gear off during a lab. Do not wear the goggles on the top of your head.
- ABSOLUTELY NO HORSEPLAY OR MESSING AROUND IN THE LAB. YOU WILL BE REMOVED FROM THE LAB.
- Read the lab before going to the lab.



Know Your Lab Surroundings

- When you are new to a lab, find the following equipment:
 - Safety shower
 - Eye wash station
 - Broken glass container
 - Fire extinguisher
 - Fire blanket
 - Closest fire alarm
 - Closest/all exits
 - Fume hood
 - Paper towel dispenser
 - Sinks
 - Gas valves and shut off switch



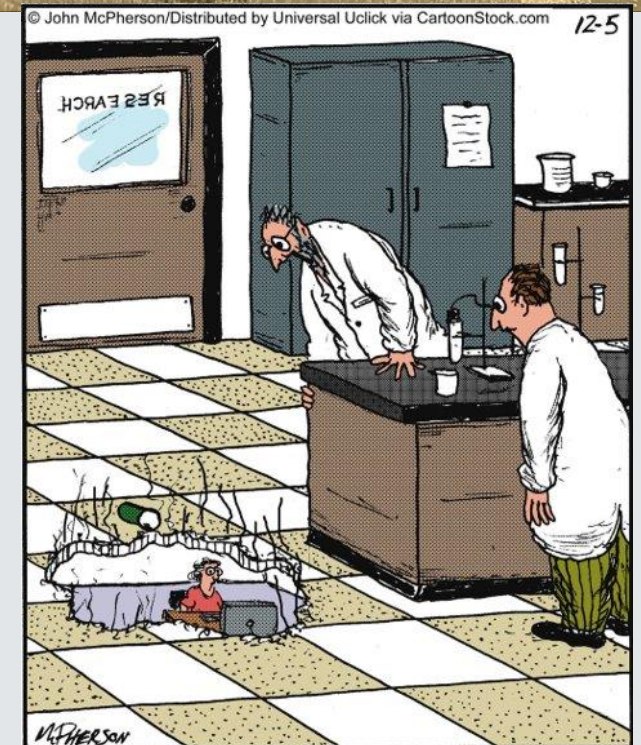
In Case of Uncontrollable Fire

- In all circumstances, alert the teacher and everyone in the surrounding area (be loud!)
- If someone is on fire
 - Use the fire blanket to prevent oxygen from fueling the fire.
- If there is a fire in the lab
 - In all cases, use the fire alarm to evacuate the building.
 - Small fires can be put out using the fire extinguisher (by teacher)
 - If the fire is large, immediately evacuate the building
- If you have burned yourself with fire
 - Run the burn under warm water for 15 minutes. Seek hospital assistance if burn is severe.



Chemical Safety

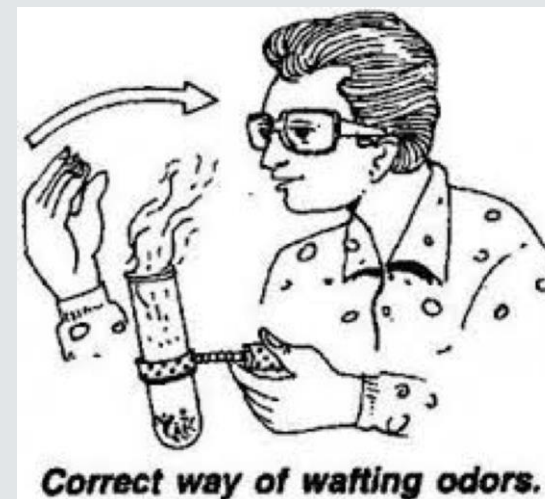
- If a chemical spills...
 - *On the Bench/floor...*
 - Clean up the mess according to the teacher/lab technician.
 - *And gets in your eyes...*
 - Use the eye wash station for 15 minutes. Make sure the water actually goes into your eyes to flush out the chemical.
 - *Onto yourself*
 - Use the safety shower to remove serious chemicals.
- In the event glassware is very damaged or breaks
 - *Dispose of the glass in the broken glass bin. Use the dustpan and broom if there are small shards of glass.*



"But that WASN'T a beaker of acid!
That was a cup of coffee from the cafeteria!"

Fume Hoods and Chemical Handling

- There are a few experiments this year that use the fume hood. Please **READ THE INSTRUCTIONS TO FIND OUT WHICH REACTIONS OCCUR IN THE FUME HOOD.**
- The fume hood prevents you from getting hurt from chemical reactions, either by the reactions themselves or the resulting fumes.
- If you wish to smell a chemical for observations, make a wafting motions with your gloved hand above the chemical to smell a small amount of the chemical.
- Some of the chemicals **DO NOT** go down the drain. Always ask questions or read the instructions to properly dispose of chemicals.













Other Safety

- Absolutely no food or drinks in the lab. Do not even have them on the bench. Water and a large amount of chemicals look identical at first glance.
- Never pipette by mouth, the chemicals have an incredibly high chance of getting into your mouth.
- A Bunsen Burner creates a large flame. When working with a Bunsen Burner, matches, lighters, or other fire hazards, move flammables away and have your long hair tied.
- When using electrical equipment, keep liquids and conductive material away from the wires. Try to prevent tripping on the wires and always pull out the wires using the head of the cord.
- Keep sharp objects facing down and cut away from yourself.
- Always clean up properly after a lab.



WHMIS

- WHMIS stands for Workplace Hazardous Materials Information System
- WHMIS are a series of pictograms that give a brief warning about a material in the lab. The system is globally used.
- For more information on chemicals, look up their safety data sheet (SDS or MSDS) sheet online (usually government website). These sheets include all properties of a compound, warnings, storage instructions, what to do if exposed to the chemical...

	Exploding bomb (for explosion or reactivity hazards)		Flame (for fire hazards)		Flame over circle (for oxidizing hazards)
	Gas cylinder (for gases under pressure)		Corrosion (for corrosive damage to metals, as well as skin, eyes)		Skull and Crossbones (can cause death or toxicity with short exposure to small amounts)
	Health hazard (may cause or suspected of causing serious health effects)		Exclamation mark (may cause less serious health effects or damage the ozone layer*)		Environment* (may cause damage to the aquatic environment)
	Biohazardous Infectious Materials (for organisms or toxins that can cause diseases in people or animals)				

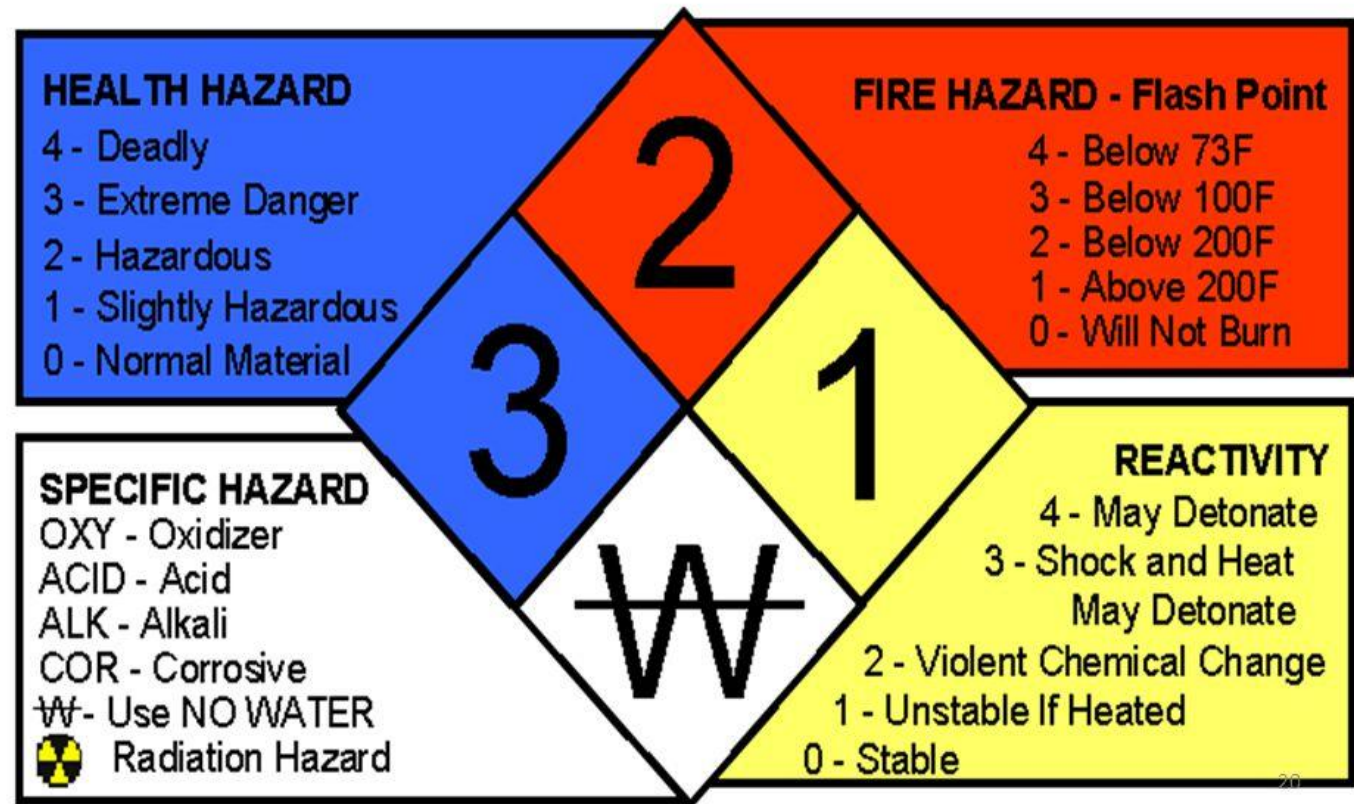
* The GHS system also defines an Environmental hazards group. This group (and its classes) was not adopted in WHMIS 2015. However, you may see the environmental classes listed on labels and Safety Data Sheets (SDSs). Including information about environmental hazards is allowed by WHMIS 2015.

National Fire Protection Association Diamond

- The NFPA safety diamond was created in the United States in 1960 and can be found on many chemicals. It is another way to quickly determine what the risks of a chemical are.
- See the picture for the types of hazards it shows. Note that the flash point is the minimum temperature for the material to give off ignitable vapours.



NFPA Diamond



Consumer Product Symbols

- Consumer product symbols are used to show the hazards of everyday household items, rather than laboratory materials.
- These symbols are entirely separate from WHMIS, but have some overlap.
- The borders tell us if the container is dangerous, or the product itself.
- There are also 3 signal words:

The Borders



Dangerous Container
The border that looks like a traffic yield sign means that the container is dangerous.



Dangerous Product
The border that looks like a traffic stop sign means that the contents of the container are dangerous.

The Hazards



Explosive
This symbol means that the container can explode. If it is punctured or heated, pieces can cause serious injuries, especially to the eyes.



Corrosive
This symbol means that the product inside the container will burn the throat or stomach if swallowed and will burn skin or eyes on contact.



Flammable
This symbol means that the product will catch on fire easily if it is near sparks, flames, or even heat.



Poisonous
This symbol means that the product will cause illness or death if you eat or drink it. For some products, just smelling or licking them is enough to cause serious harm.

- **CAUTION** means temporary injury may result. Death may occur with extreme exposure.
- **DANGER** means may cause temporary or permanent injury, or death.
- **EXTREME DANGER** means exposure to very low amounts may cause death or serious injury.