Why Lab Safety?

* Protect yourself from laboratory hazards
* Protect students and others from laboratory hazards
* Comply with University, State and Federal regulations

Training Requirements

- **Specific Work Practices**
  - Chemical hygiene plan/lab manual
  - Location & availability of MSDSs
  - Specific lab safety work practices or SOPs
  - Training whenever new hazards are used in the lab

- **Personal Protective Equipment**
  - Instruction on appropriate PPE & how to use it
  - Location & availability of PPE & maintenance of reusable PPE

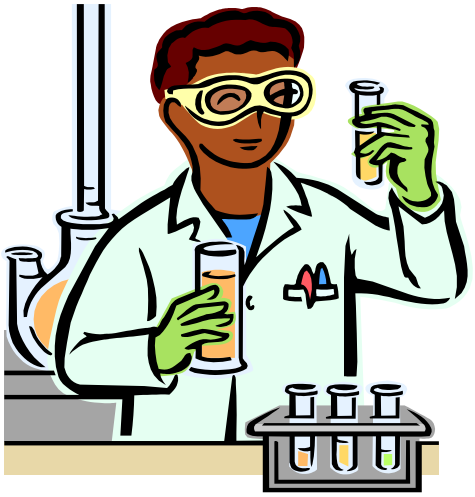
- **Lab Equipment**
  - Location & operation of eyewash &/or shower stations
  - Use of fume hoods, storage cabinets, refrigerators & other engineering controls

- **Waste Handling and Spill Response**
  - Chemical waste handling & disposal procedures
  - Location & availability of spill kits & emergency checklists
  - Spill response procedures

While Working in the Lab:

The following rules can be found in the Chemical Hygiene Plan

- **Food, Drink, Cosmetics.** Eating, drinking and the application of cosmetics (including lip balm) is forbidden in areas where hazardous chemicals are used and must be done only in well-defined designated non-chemical areas. Do not store food in the same refrigerator with chemicals, biohazards or radioactive materials.
- **Horseplay.** Horseplay, practical jokes or other inappropriate and unprofessional behavior in the laboratory setting is forbidden. Avoid distracting or startling any other students/ workers



Lab Safety Tips

* **Proper Apparel**: Wear splash-proof goggles; face shield, etc. Wear a lab coat or apron if possible; at a minimum attire should include sleeves as well as cover the full length of your legs; close-toed shoes must be worn in the lab. Confine long hair and loose clothing or jewelry. False fingernails are not recommended, as they are flammable.
* **Personal Hygiene**: Do not put your hands in your eyes or mouth. Make sure your hands are washed before leaving the laboratory area.

Material Safety Data Sheets

* An MSDS Must Be on File & Available for Each Chemical in the Lab.
* An MSDS lists:
  * **Product Identity**
  * **Hazardous Ingredients**
  * **Physical Data**
  * **Fire & Explosion Hazard Data**
  * **Reactivity Data**
  * **Health Hazard Data**
  * **Precautions for Safe Handling & Use**
  * **Control Measures**

Ideal Storage Area Set-Up

Acids

Bases

Oxidizers

Room Should Have:

- Eye Wash
- Safety Shower
- Emergency Phone
- Fire Extinguisher

Dry Chemicals

Spill Materials

Metal Salts

Nitrates

Flammables Cabinet

Chemical Storage

* Flammable liquids cannot be stored on floor. “Fire protection for Laboratories Using Chemicals” allows for a maximum of 5 gallons of flammable liquids (sprinklered lab) outside of a flammable storage cabinet.
* Allows a maximum of 2 gallons of flammable liquids (non-sprinklered lab) outside of a flammable storage cabinet

Chemical Storage

* **ACIDS**
  * Acetic Acid, *Chromic Acid, Hydrochloric Acid, Hydrofluoric Acid, *Nitric Acid, Phosphoric Acid, Sulfuric Acid
  * *Indicates strong oxidizing acids, store per **oxidizers** section
  * **Storage Precautions**: Store bottles on low shelf areas, or in acid cabinets.
  * Segregate oxidizing acids from organic acids, **AND** flammable materials.
  * Segregate acids from bases, **AND** from active metals such as sodium, potassium, etc.
  * Segregate acids from chemicals which could generate toxic gases such as sodium cyanide, iron sulfide, etc.

Chemical Storage

* **BASES**
* Ammonium Hydroxide, Potassium Hydroxide, Sodium Hydroxide.
* **Storage Precautions:**
* Separate bases from acids.
* Store bottles on low shelf areas, or in acid cabinets

Safety Showers and Eyewashes

- Must Be Available in All Lab Areas That Use or Store Chemicals Which Are Corrosive or an Irritant to the Eyes or Skin
- Combination Eye Wash & Drench Hose Units at the Sink are Now Available

Waste Chemical Disposal

* **Requires:**
  * **Proper storage**– same rules apply – make sure waste chemicals are compatible
  * **Proper labeling** – tags should be placed on bottles name of chemical
  * **Pre-planning** – know what waste you're creating prior to carrying out experiments; minimize purchases
  * **Record-keeping** – of all waste chemicals on hand and those already picked up for disposal

Certain Spills Aren't for Quick Clean-up

* As a science teacher or lab specialist, you should **only** respond to incidental chemical releases, or small spills.

* For large or especially hazardous spills:
  * Quickly assess whether there are any injured persons and attend to any person who may have been contaminated.
  * Follow the notification, evacuation and emergency medical treatment procedures for your school.
  * Evacuate the immediate area until the hazardous release has been characterized and controlled.

While Working in the Lab:

Report **all:**

- Accidents
- Injuries
- Fires
- Spills
- Close calls

Before Leaving the Lab:

- Identify and package waste, dispose properly
- Identify and label defective equipment
- Decontaminate work surfaces and equipment