



### It starts with responsibility...

- ✓ The responsibility for lab safety rests with each and every student in the laboratory. You must use common sense and work carefully to avoid chemical spills, broken glassware, and fires. This ensures not only your own safety, but that of your lab mates.

### Avoid Horseplay

- ✓ In a laboratory setting, horseplay, even if good-natured, is:
  - absolutely unacceptable.
    - No pushing!
    - No shoving!
  - **Serious accidents** all too often result involving the glassware or solutions in use broken or spilled.
  - Disciplinary measures will be in effect for accidents in the lab resulting from horseplay.

### Monitor...

- ✓ Experiments must be personally monitored at all times. Do not wander around the room, distract other students, startle other students or interfere with the laboratory experiments of others.
- ✓ If there is a fire drill or tornado drill during a laboratory period, containers must be closed, and any electrical equipment turned off.

### Safety is #1:

- ✓ **No UNAUTHORIZED experiments!**
- ✓ **No EATING or DRINKING in the LAB.**
  - A good practice is to assume everything in the lab is toxic.
- ✓ **DO NOT drink from lab equipment.**
- ✓ **You do not know what another person might have added to a "distilled water" jug or beaker etc.**
- ✓ Work in the lab only when the teacher is present or when you have permission to do so.

### Safety is #1 Continued...

- ✓ Read the label on chemical bottles at least twice before using the chemical. Many chemicals have names that are easily confused.
- ✓ Return all lab materials and equipment to their proper places after use.
- ✓ When your work is done, wash and dry all equipment, your lab bench and clean-up your area.
- ✓ **All chemicals in the laboratory are to be considered dangerous. Avoid handling chemicals with fingers.**

## Safety is #1 Continued...

- ✓ **Never** return unused chemicals to their original container.
- ✓ **Never** remove chemicals or other materials from the laboratory area.
- ✓ Take only as much of a chemical as you need for the experiment.



## Safety is #1 Continued...

- ✓ When first entering a science room, **do not touch any equipment, chemicals, or other materials in the laboratory area until you are instructed to do so.**
- ✓ Dispose of all chemical waste properly. Never mix chemicals in sink drains. Sinks are to be used only for water. Check with your teacher for disposal of chemicals and solutions.

## Safety is #1: Continued...

### ✓ TESTING of ODORS:

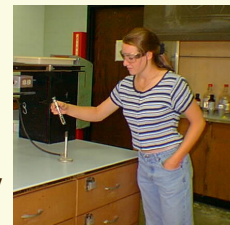
- Do NOT smell the flask directly.
- ✓ If you absolutely must test the odor, carefully waft the vapor from the flask toward your nose with your hand.
- Keep the flask quite distant from your face.



## Safety is #1: Continued...

- ✓ Make sure that reaction tubes, e.g. test tubes, are not directed toward yourself or other persons.

- The chemicals may splatter out the tube.



## Safety is #1 Continued...

- ✓ DO NOT add **WATER** to **CONCENTRATED ACID**.

- The heat generated may cause splattering.
- We probably will not use concentrated acids anyway, so just keep this info in mind for future reference.

- ✓ If necessary to prepare certain solutions, **DO** add **ACID** to **WATER** (instead of the reverse order of addition).

- The heat generated will be less, but splattering still may occur.
- A good practice in all lab operations is to keep things at arm's length.
- Always wear eye protection.

## Goggles!

- ✓ Many states require *by law* that students wear approved safety goggles or safety glasses when in the lab. This is an *absolute "MUST"!*



## Goggles!!!



~Never use goggles as a neck protector or a headband!



~Goggles are for Eye protection and should be covering your eyes! (Also don't stretch them away from your face, leave them in contact with your skin so chemicals can not splash up under them!)

## Avoid floppy garments, hair, and things that dangle...



- ✓ These get tangled in equipment or glassware and cause accidents
- ✓ Avoid long, loose hair styles: they get tangled and can get into chemicals or catch fire. (Long hair must be pulled back for most labs.)

## Broken Glass:

- ✓ Inform Mrs. Donley of an incident.
- ✓ Sweep it up right away
- ✓ Don't track in it all period.
- ✓ Place the broken glass in a "SHARP'S CONTAINER."
- ✓ This is a thick walled carton, that will be sealed and discarded as such.

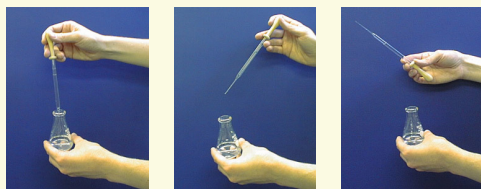


- If such a container is not available, a milk carton is an acceptable substitute.

## How to use a pipette...

- ✓ Pipettes must be used in a vertical position. This means, up and down. You are allowed to have it at an angle though. The bulb on top, the tip of the pipette pointed down.
- ✓ NEVER, hold a filled pipette upside down. If you hold it this way, the liquid runs into the bulb.
- ✓ Always squeeze air out of a pipette before inserting it into a liquid (and don't let it back in).
- ✓ NEVER squirt a pipette at anyone!

## How to use a pipette...



Yes


Yes

No

## A GOOD PRACTICE:



- Read the **experimental procedure** ahead of lab.
- **NOT** just as you do the procedure because mistakes then, are common and can ruin your experiment.
- Remember to always read all of the instructions before you begin.



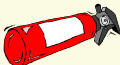
### First Aid:

- ✓ Inform Mrs. Donley of an incident.
- ✓ If blood is present-- **STAY AWAY!**
- ✓ Let the victim apply his/her own bandage.
- ✓ If blood is on the floor or lab bench, let trained personnel do the clean-up.

### Safety equipment:

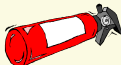
- ✓ Fire Extinguisher
- ✓ Fire Blanket
- ✓ Eye-wash Fountain
- ✓ First-Aid Kit

### Fire Extinguishers:



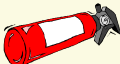
- ✓ There are two main types of **fire extinguishers**: **carbon dioxide**
  - dry chemical (powder)
- ✓ Read the tag to know which you will use. The tag also should show the date the extinguisher was last serviced.

### When to use which....




- ✓ Carbon dioxide extinguishers are good, **general purpose** extinguishers.
- ✓ Dry-chemical (powder) are used for difficult cases, say certain types of electrical fires.
- ✓ **AVOID** using a dry-chemical extinguisher on a fellow human being.
  - The powder may get in the victim's eye and cause irritation.

### USAGE:



- ✓ Locate the "KEY" (the round object)
- ✓ **Twist** the "KEY" to break the stiff Nylon retaining cord
- ✓ **Then** pull "KEY" out
  - Do not merely attempt to pull the key straight out, unless you are very strong.
- ✓ Raise the nozzle in order to direct the stream of carbon dioxide
- ✓ Squeeze the handle to begin operation.

### Fire Blanket:



- ✓ Usage:
- ✓ Yank the blanket out of the wall holder.
- ✓ Wrap it around the victim to smother the fire Good for fires involving equipment
- ✓ You may also use it for equipment: A fire extinguisher would destroy a computer.

## **Eyewash Fountain**

- ✓ Run some water through the eyewash fountain before you use it.
- ✓ Retract your eyelid (hold it open);
- ✓ Don't squint your eyes
  - this restricts water access.
- ✓ Run fresh water over your eye for several minutes.
  - If the water is COLD
    - Wash your eyes INTERMITTENTLY
    - Rest in between rinses.

## **Eyewash Fountain**

- ✓ Go to the school nurse immediately afterward.
- ✓ If you get something from the lab in your eye—
  - GET IT OUT IMMEDIATELY!
  - Don't wait until lunch or the last period!

## **Bunsen Burner Usage**

- ✓ Make sure the rubber hoses are *firmly* attached.
  - Both at the gas outlet and at the burner.
- ✓ To light a Bunsen burner:
  - Turn up the gas flow until you hear a gentle flow of gas.
- ✓ Light the burner by bringing the match **UP** from the base toward the burner nozzle. Remember: down-to-up!
- ✓ The match should be quenched with water at the faucet, NOT thrown into the waste directly.
  - You may think the match flame is out, but
  - Fires may still occur from the smoldering match.