

Laboratory Safety

- **Everyone MUST OBEY the Safety Rules !!**
- **Common Safety Rules WILL BE ENFORCED.**
- **Understand what you are doing – if not, ask questions.**
- **Use Common Sense & Good Lab Practidce**
- **Follow all instructions in the manual & from TA.**

Chemical Precautions

Know the chemical hazard(s) with the chemicals being used and know precautions to use.

Learn the chemical hazards from Chemical Alerts given in the lab manual or from the Material Safety Data Sheets in the Stockroom.

Always dispose of chemicals in the manner given in the experiment.

Waste containers will be in the fume hood.

Key words/phrases from Chemical Alerts or MSDS

Wording	Precautions to use with the chemical
Irritant	Do not breathe vapors; Avoid contact with skin and eyes
Corrosive	Wear safety goggles; Avoid contact with skin, eyes or clothing
Flammable	Keep chemical away from heat, sparks, or flames; Keep container closed.
Oxidizing agent	Keep chemical away from contact with skin, eyes or clothing; Avoid mixing with other chemicals except as directed
Toxic	Avoid all contact with the body. Avoid inhalation, swallowing, or contact with skin (especially broken skin.)
Lachrymator (cause tears)	Open bottle in the fume hood; Avoid contact with eyes and skin.
Carcinogen cancer causing	Use extreme care when using or handling; Avoid all contact with skin, eyes, & lungs.
Hygroscopic (absorbs H ₂ O)	Keep container tightly capped. Recap immediately after use.
Moisture sensitive	Keep container tightly capped. Recap immediately after use. Do not let chemical sit out in the air.

Protection

To protect your eyes ...

- **Must wear splash proof safety goggles.**
- **Must wear them as long as you or anyone is working with chemicals or glassware.**

To protect your skin ...

- **Must wear lab apron or lab coat at all times.**
- **Best clothing is jeans or sweat/scrub pants and long sleeved shirts.**
- **Shorts/skirts must come to the knee.**
 - **No halter tops, crop tops, bare midriffs.**
 - **No short shorts or short skirts.**

To protect your feet ...

- **Must wear enclosed toe shoes.**
 - **No sandals, flip-flops, high heels or slings.**

Other protections:

- **Must secure long hair.**
- **Never eat, drink, or smoke in the lab.**
- **No pranks or horseplay in the lab.**

WHAT TO DO IF

If chemical is on small area of your skin ...

- **IMMEDIATELY wash for 15 minutes.**
If injury, seek medical attention.

If chemical is on large area of your skin ...

- **IMMEDIATELY flood area with water from safety shower for 15 minutes.**
- **If chemical is on clothing – quickly remove clothing first & rinse body.**
- **Seek medical attention promptly.**

If chemical is on your face ...

- **IMMEDIATELY wash your face for 15 minutes with goggles still in place.**

If chemical is in your eye(s) ...

- **IMMEDIATELY flush eye(s) with water from eye wash for 15 minutes.**
- **Hold eye(s) open and move eye while washing.**
- **If contact lens is present, begin washing eye(s) for a minute, then remove contact. Resume washing the eye(s).**

Good Lab Practices:

- **Keep emergency paths clear. No book bags in floor – place in locker.**
- **Understand experimental procedure. Use clean glassware.**
- **Check labels on reagent bottles.**
- **Never put pipets or other glassware into reagent bottles. Pour into a small beaker.**
- **Do not take excess chemical. Never pour back excess into bottle – dispose of excess.**
- **Replace caps on reagent bottles immediately.**
- **Use lowest heat setting on hot plate. Use towel to remove glassware from hot plate.**
- **Make sure all glassware is securely clamped to ring stand and balanced.**
- **Use vacuum tubing for the water aspirator.**
- **Dispose of all chemicals appropriately.**
- **Only broken glass goes into the glass box. Plastic Beral pipets go into the trash can.**
- **Never work in a lab without TA present.**
- **Never perform unauthorized experiments.**
- **Report ALL accidents to TA, no matter how small.**

WHAT TO DO IN AN EMERGENCY:

Know the location of emergency features:

- ***Safety Showers:*** Hand held shower is in the front of the lab. Overhead shower is in the Stockroom, 124 Choppin.
- ***Fire Extinguisher:*** By the front door of the lab. **PASS:** Pull pin; Aim nozzle; Squeeze handles; Sweep in sideways motion
- ***Fire Blanket:*** In the labeled red canister by the front door of the lab.
- ***Eyewash:*** Hand held eyewash bottle is on the shelf in the room. Eyewash fountain is in the Stockroom, 124 Choppin.
- ***Fume Hood:*** In the back of the lab.
- ***Sink:*** In the back of the lab.
- ***Emergency Exits:*** The door located at the front of the lab and the connecting door(s) to the adjacent lab(s). Exit the building.

Indicate the positions of the above items on the diagram in your manual.

- ***First-Aid Station:*** In the Stockroom, 124 Choppin.
- ***Material Safety Data Sheets (MSDS):*** In a binder in the Stockroom (124 Choppin).

In the event of ...

a small fire – Notify TA IMMEDIATELY.

If it is contained to a small container, smother the fire by covering with a watch glass or lid.

a large fire, – Notify TA IMMEDIATELY.

Immediately evacuate the room via the closest emergency exit. If an exit is blocked by the fire, leave by an alternate exit.

Call 911 for fire department and evacuate the building.

a person is on fire – Notify TA IMMEDIATELY.

Get the victim to Stop, Drop, and Roll to put out the fire or douse the victim with water. Beat out or smother any flames still remaining, starting at the head and working towards the feet.

Remove any burned clothing from the skin. Wrap the victim in the fire blanket.

NEVER use a fire extinguisher on a person.

an accident involving glassware and/or chemicals

– Notify TA IMMEDIATELY.

TA will determine the appropriate method to clean up and/or neutralize the spilled chemicals. Dispose of the chemical in the appropriate manner.

a student becomes ill during a experiment – Notify TA IMMEDIATELY

The TA will summon help and the appropriate medical assistance or first-aid will be given.

Commitment to Safety

I agree that I will ...

- ✓ Know all the locations of the safety items and emergency exits.
- ✓ Wear proper eye protection (splash proof goggles) at all times in the lab.
- ✓ Wear a lab apron or lab coat and sensible clothing in the lab.
- ✓ Work as safely as I can in the laboratory.
- ✓ Carefully listen to and follow the instructions given by my TA.
- ✓ Carefully read the labels on all reagent bottles.
- ✓ Dispose of the excess chemicals and used materials according to disposal directions.
- ✓ Report any accidents/chemical spills to my TA.
- ✓ Clean up spills and broken glass immediately.
- ✓ Clean my lab bench and wash my hands before leaving the lab.
- ✓ Not perform unauthorized experiments or work alone in the lab.
- ✓ Not eat, drink, smoke, or chew in the lab.

ALL APPROPRIATE PRECAUTIONS FOR A SAFE WORKING ENVIRONMENT MUST BE OBSERVED BY EVERYONE.

- All of us come into limited contact with hazardous chemicals in our everyday life. It is impossible to avoid handling every known or suspected 'toxic' or 'irritant' substance. The lab manual provides information in each experiment about most of the chemicals to be used. More information can be found in the Material Safety Data Sheets (MSDS) located in the Stockroom, 124 Choppin.

➤ Pregnancy, Allergies, Chemical Sensitivity.

A wide variety of substances are used in this laboratory course. If a student has or suspects a medical condition or a health problem, which might be affected by being in a chemical laboratory, the student should consult his/her personal physician. Your laboratory instructor cannot give you medical advice, but should be informed of concerns and potential problems.

SAFETY QUIZ

- 1. It is necessary to wear goggles**
 - a) when using a bunsen burner.**
 - b) only for experiments that use acids and bases.**
 - c) any time chemicals or glassware are being used.**

- 2. If you cut your finger in the lab, you should ...**
 - a) put it in your mouth.**
 - b) hide it so no one will know.**
 - c) report it to your instructor.**

- 3. Eating in the lab is ...**
 - a) not permitted.**
 - b) allowed at lunch/snack time.**
 - c) all right if you are careful.**

- 4. In the lab you should wear ...**
 - a) your best clothes.**
 - b) shorts and sandals if it is hot.**
 - c) sensible clothing and a lab apron.**

- 5. If a chemical is spilled on you, you should ...**
 - a) wait to see if it burns.**
 - b) flood it with water for 15 minutes.**
 - c) add another chemical to absorb it.**

- 6. Dispose of the excess chemicals by**
 - a) pouring it back into the bottle.**
 - b) pouring it down the drain.**
 - c) using the proper waste method.**

- 7. Working alone in a lab without supervision is**
 - a) never allowed.**
 - b) okay if the experiment is short.**
 - c) okay if you can do the experiment without help.**

- 8. Personal items, (ex. backpacks) should be ...**
 - a) placed on the floor next to you.**
 - b) placed in the storage area of the lab.**
 - c) kept on the lab bench in case you need something.**

- 9. If a chemical is spilled on the table ...**
 - a) clean it up right away.**
 - b) let the next class clean it up.**
 - c) forget about it and let it evaporate.**

- 10. Sketch the following locations in your lab**
 - a) two emergency exits**
 - b) fire blanket**
 - c) eye wash**
 - d) safety shower**
 - e) fire extinguisher**