

SAFETY RULES FOR ALL BIOLOGY LABORATORIES

The University of Texas at Tyler

INTRODUCTION

Each year many students are injured in biology laboratories through carelessness. Unavoidable accidents may occur, but most injuries are caused by failing to use common sense. Furthermore, the severity of the injury is, in many cases, increased because of ignorance and lack of preparation. The purpose of this handout is to help prevent needless injury, to minimize accidents, and to make you aware of common safety features. Please read the following safety rules carefully.

GENERAL SAFETY RULES

1. Proper care of equipment and working areas is the first step in safety. A neat and orderly working area promotes safety.
2. Always use *common sense* in the lab. If you are unsure of yourself or your equipment or if you do not understand something, do not proceed with your experiment. Consult with the instructor.
3. **Long hair must be kept tightly in place.** *Hair and loose clothing catch fire very easily.*
4. Eating of food or chewing gum in the laboratory is prohibited.
5. **Horseplay is not permitted in the laboratory.**
6. Know the location of safety equipment: fire extinguishers, safety showers, eye wash facilities, fire blanket, and first aid kit.
7. Do not use cracked or chipped glassware. Dispose of it in a proper manner and obtain a replacement from the instructor or teaching assistant (TA).
8. Spilled materials, whether liquid or solid, corrosive or inert must be cleaned up promptly and completely. See your instructor for proper clean-up procedures.
9. Gases and vapors presenting fire or health hazards must be vented into a hood. You will be told when the hoods should be used.
10. **Always add acid to water and not vice versa.** When a drop of water is put into some concentrated acids, the heat evolved is sufficient to change the water into steam and spattering occurs. *Therefore, never pour water into acids.*

11. If any material is spilled on the skin, wash it off *immediately* with large volumes of water. Use soap and water if necessary.
12. Do not perform unauthorized experiments or work unsupervised.
13. Help others if you notice them using unsafe practices.
14. When heating a test tube, always point the mouth away from everyone working near you.
15. Open flames should be avoided near volatile solvents and never heat a flammable liquid in an open container. Whenever possible, use hot plates in the place of Bunsen burners
16. *Never taste chemicals.* Many of them are extremely poisonous.
17. Use extreme care when smelling chemicals. *Never hold your nose directly over a chemical.* Use your hand to waft the vapors towards your nose.
18. Many of the chemicals encountered in the laboratory are toxic or flammable. For example, if you were to place your hand in a beaker of carbon tetrachloride for 5 minutes, enough of this solvent would be absorbed to cause death. Although this substance is particularly dangerous, care should be exercised when using all materials. Odors arising from certain chemicals, such as alcohol, acetone, and formalin, can also be a dangerous hazard to health. It is the law that you be provided information of all chemical hazards before beginning the laboratory.
19. There are four designated containers for refuse disposal. Your instructor will caution you on the proper place to dispose of refuse.
 - a. Dispose of uncontaminated soft materials in trash cans.
 - b. Dispose of uncontaminated sharps (scalpel blades, broken glass, etc.) properly. Place **only** uncontaminated sharps in the sharps box (The sharps box is not a trash can.) The uncontaminated sharps box will be a pasteboard box with a plastic liner.
 - c. Dispose of contaminated (body fluids, blood, etc.) sharps properly. Place **only** contaminated sharps in the sharps box (The sharps box is not a trash can). The contaminated sharps box will be a hard plastic box usually red in color.
 - d. Dispose of soft contaminated items (contaminated paper towels, gloves, tissues, etc.) in the biohazard boxes (The biohazard box is not a trash can.). The biohazard box is a large pasteboard box with a plastic liner.
20. **Notify the instructor immediately in the case of an accident.**

SPECIFIC SAFETY RULES

These rules will apply as specified by your instructor. Certain laboratory exercises and experiments will require attention to one or more of the following rules.

1. **Approved goggles must be worn in the lab at all times.** Even if you are done with your experiment, one of your fellow students could have an accident that damages your eyes.
2. **You may not wear open toed shoes or sandals in the laboratory.**
3. **Long pants must be worn.** However, you may wear shorts if you cover your legs with a knee length apron or lab coat. In either case, it's always a good idea to wear lab aprons or lab coats because they are fire resistant and protect you and your clothing from corrosive chemicals.
4. **Wear gloves and safety goggles at all times when handling human body fluids such as tissue exudates and blood.**
5. Use caution when microorganisms have been grown to high concentrations. Even non-pathogenic organisms may become infectious when you are exposed to them in high concentrations.
6. All students should read the Material Safety Data Sheets (MSDS) for the chemicals they will use and have reviewed the MSDS summary sheet for interpretation.
7. In general contact lenses are not safe in the biological laboratory and the Department of Biology suggests that you **not** wear them while working in the lab. Specifically, wearing contact lenses in lab will expose you to additional hazards from chemical splashes, vapors, and contamination from dirty hands. Contact lenses are organic polymers and susceptible to undesirable interactions with some chemicals. For example, a certain chemical vapor may soften the lens and cause it to stick to the cornea. Although we suggest that you do not wear your lenses in the laboratory, we do not ban them. If you do feel that you will still wear your lenses to lab, we require you to read and sign the attached waiver.

BASIC INSTRUCTIONS FOR ALL LABORATORY WORK

1. Read the assignment and prepare your pre-lab *before* coming to the laboratory.
3. If instructed to hand in substances, use a suitably stoppered container which is labeled as follows:

MARY GENES
BIOL 1106-01
Alu PCR product
01/01/02

4. Dispose of excess reagents as instructed by your instructor. NEVER RETURN REAGENTS TO REAGENT BOT'TLES.
5. Do not place reagent-bottle stoppers on the desk; they may become contaminated or leave residues on the counter tops. Instead, hold them in your hand. You will be shown how to do this. Replace the stopper on the same bottle, never on a different one.
6. Leave reagent bottles on the shelf where you found them. Use only the amount of reagent called for; avoid excesses. *We all must share!*
7. Whenever instructed to use water in these experiments, use distilled water unless instructed to do otherwise.
8. Keep your area clean.
9. Do not borrow apparatus from other desks. If you need extra equipment, obtain it from your instructor or teaching assistant (TA).
10. Respect the balances, microscopes and other delicate and expensive equipment. Do not weigh chemicals directly on the balance pan. Instead use a weighing boat, smaller beaker, or some other container. Always carry a microscope with both hands.
11. Do not weigh hot or warm objects. Allow objects to return to room temperature before weighing.
12. Hot objects placed on the desktop may crack or shatter. To avoid this, place them on a wire gauze or heat-resistant pad.
13. Wear proper attire. Proper attire will be defined by the nature of the laboratory exercise you participate in. Your instructor will inform you of the proper attire to wear.
14. For off-campus field trips be sure to read, understand, and sign the Release and Indemnification Agreement.

Instructors will have student sign a copy of the laboratory roll indicating the student's awareness and understanding of the safety rules.

Attach the following statement to a copy of your roll and have each student sign beside their name.

Laboratory Rules and Safety Awareness

I have read and understand the safety rules and the basic instructions for laboratory work and will abide by these rules while in the laboratory. I am also aware that these rules are available as a handout, posted on the department website and laboratory bulletin board, and are available in the Department of Biology Safety Handbook .

Contact Lens Waiver

I hereby release the Department of Biology at the University of Texas at Tyler and its agents from any responsibility for any injury to my person or damage to my contact lenses as a result of wearing contact lenses in the laboratory. I also understand and agree to observe the following special regulations:

1. I will wear safety goggles at all times. I understand that safety glasses are not sufficient.
2. I will wash my hands, eyes, and lenses immediately after leaving the laboratory using facilities outside the laboratory areas.
3. I will avoid all unnecessary exposure to volatile corrosives and organic solvents. These materials will be used in a lab hood only.
4. I will notify my instructor, and or lab assistant immediately of any eye irritation.
5. I will never handle or adjust my lenses in lab. To handle or adjust my lenses, I will thoroughly wash my hands, then exit the laboratory area.

Signed: _____ Date: _____