

PROCEDURE AND POLICIES FOR MAINTAINING BIOCHEMISTRY LABORATORY

SAFETY IN THE LABORATORY

Students working in a Biochemistry Laboratory must always be aware that the chemicals used are potentially toxic, irritating and flammable. Such chemicals are hazardous, however, only when they are mishandled. Students who come to the laboratory session must have a complete understanding of the laboratory procedures to carry out and be familiar with both the physical and chemical properties of chemicals and reagents to be used. Since the carelessness on the part of one student can often cause injury to other students, one must have a special concern for the safety of classmates. Students must be familiar with general safety practices, facilities and emergency action.

- Be familiar with the location of emergency equipment such as fire alarms, fire extinguishers, emergency eyewash, and shower stations and know the appropriate emergency response procedures.
- Laboratory employees shall be familiar with the signs and symptoms of exposure for the materials with which they work and the precautions necessary to prevent exposure.
- Keep the benches and shelves clean and well-organized
- Avoid contaminating the chemicals, use only clean glassware and spatulas, label glassware in use.
- When performing laboratory experiments, you should always wear a lab coat.
- Plan your experiments before starting to carry them out.
- Always be watchful and considerate of others working in the laboratory. It is important not to jeopardize their safety or yours.
- Always use equipments that are in good condition.
- Any piece of glass wears that is cracked and chipped should be discarded and replaced.
- Do not work alone in the laboratory.
- Unauthorized experiments are not allowed.
- Do not mouth-pipette.
- Avoid tasting or smelling chemicals.
- Avoid distracting or startling other workers when they are handling hazardous materials.

- Avoid eating, drinking, smoking, or applying of commercial products in any laboratory area where hazardous chemicals or biological hazards are in use.
- Refrigerators and microwave ovens used for chemical or biological storage or other laboratory use shall not be used for food storage or preparation.
- The laboratory is equipped with fire extinguishers, eye washes, safety showers, fume hoods and first-aid kits.
- Special care for eye protection is required. Safety glasses must be used when certain procedures are being carried out.
- The use of contact lenses is not recommended, since they reduce the rate of self-cleansing of the eye.
- While heating a solution one should make sure not to overheat it; therefore, vigorous mixing of the solution by shaking or stirring is required. The mouth of the glassware containing the solution to be heated should never be pointed toward anyone.
- Handling of strong acids and bases requires special attention. When diluting concentrated acids, the acid should be poured into the water and never the opposite.
- In the event of acid spilling on one's body, flush thoroughly with water immediately. Be aware that acid-water mixtures will produce heat. Removing clothing from the affected area while water flushing may be important, as to not trap hot acid-water mixtures against the skin. Acids or acid-water mixtures can cause very serious burns if left contact with skin, even if only for a very short period of time.
- Weak acid (citric acid) should be used to neutralize base spills, and weak bases (sodium carbonate) should be used to neutralize acid spills. Solutions of these should be readily available in the lab in place of emergency.
- Always inspect equipment for leaks, tears or other damage before handling a hazardous material. This includes fume hoods, gloves, goggles, etc.
- The pipets should never be filled with solutions of toxic substances, biological fluids, strong acids and bases by mouth suction. Use either automatic pipets or pipet pumps.
- Volatile liquids and solids that are toxic or irritating should be handled under fume hoods.

- While handling flammable liquids such as ether, alcohols, benzene naked flame (burners, matches) must not be in use. The above liquids must not be stored near radiating heat sources, such as the laboratory oven.
- Every chemical should be treated as though it were dangerous.
- Do not allow any solvent to come into contact with your skin.
- All chemicals should always be clearly labelled with the name of the substance, its concentration, the date it was received, and the name of the person responsible for it.
- Before removing any of the contents from a chemical bottle, read the label twice.
- Never take more chemicals from a bottle than you need for your work.
- Do not put unused chemicals back into their original container.
- Chemicals or other materials should never be taken out of the laboratory.
- Chemicals should never be mixed in sink drains.
- Flammable and volatile chemicals should only be used in a fume hood.
- If a chemical spill occurs, clean it up right away.
- Ensure that all chemical waste is disposed of properly.
- Before using electrical appliances, make sure they are grounded.
- Flasks with flat-bottoms or thin walls should not be desiccated.
- Wash thoroughly with soap and water after handling chemicals or biological materials, before leaving the laboratory and before eating or drinking..
- Before leaving the laboratory, electrical equipment should be turned off, and gas burners extinguished. No tap water should be left running.
- Laboratory is never a place for practical jokes/pranks.
- Cuts and burns must be immediately treated. Use ice on new burns and consult a doctor for serious cuts.

The Laboratory Notebook

All students need to maintain a laboratory notebook. The notebook should be used for the recording of laboratory data and calculations, and is critically important for writing your lab reports. The purpose of a laboratory notebook is to allow anyone with some biochemical knowledge to understand exactly what you did. You need to record the information in sufficient detail so as to be able to repeat it, and you must be able to understand exactly what your results

were. You will need good notes to be able to write your lab reports; in addition, as your understanding of biochemistry improves, your notebook may allow you to figure out why some parts of your experiments did not work as expected.

LABORATORY SECURITY

Laboratory Personnel Responsibilities: For research labs, Principal Investigators are responsible for the security of their laboratories. In teaching labs, the Department Chair is responsible for chemical and equipment security.

Laboratory Access: Faculty, staff and students will be provided with access cards or brass keys upon approval by the Department Chair or Dean of the College, or their designee.

Rules to follow in the case of accidents and injuries

Chemical splatters into the eye. First the eyelid should be opened by using the thumb and the pointing finger. Then, by using the eye wash kit, the eye should be rinsed with large amounts of water. When an acid or alkaline solution gets into eye, the eye should be rinsed with 1 % Sodium Bicarbonate or 1 % boric acid, respectively. The victim should be taken to the doctor as soon as possible.

Burning. The burned spot on the skin should not be treated with water; rather, a special bandage should be used. See doctor if necessary.

Poisoning. Prompt medical treatment should be obtained.

All injuries and accidents must be reported to the instructor, regardless of how minor you perceive it to be.