

General Rules for Working with Chemicals

PRUDENT LABORATORY PRACTICES

It is prudent to minimize all chemical exposures. Few laboratory chemicals are without hazards, and general precautions for handling all laboratory chemicals should be adopted, in addition to specific guidelines for particular chemicals. Exposure should be minimized even for substances of no known significant hazard, and special precautions should be taken for work with substances that present special hazards. One should assume that any mixture will be more toxic than its most toxic component and that all substances of unknown toxicity are toxic.

Avoid inadvertent exposures to hazardous chemicals by developing and encouraging safe habits and thereby promoting a strong safety culture.

SAFE LABORATORY HABITS

Personal Protective Equipment:

- Wear closed-toe shoes and full length pants at all times when in the laboratory.
- Utilize appropriate laboratory coats, nitrile gloves, and safety glasses or goggles while in the laboratory and while performing procedures that involve the use of hazardous chemicals or materials.
- Confine long hair and loose clothing.
- Wear appropriate gloves when the potential for contact with toxic materials exists; inspect the gloves before each use, and replace them often.
- Remove laboratory coats or gloves immediately on significant contamination, as well as before leaving the laboratory
- Ensure that appropriate PPE is worn by all persons, including visitors, where chemicals are stored or handled
- Use appropriate respiratory equipment when air contaminant concentrations are not sufficiently restricted by engineering controls, inspecting the respirator before use. Use of respirators requires enrollment in the EH&S Respirator Program. (2-9565).
- Use any other protective and emergency apparel and equipment as appropriate. Be aware of the locations of first aid kits and emergency eyewash and shower stations.

Chemical Handling:

- Use chemicals in fume hoods that are operating properly. Immediately report any fume hood that appears to be not working.
- Get SDS for chemical being used, have read for emergency response
- Vent apparatus which may discharge toxic chemicals (vacuum pumps, distillation columns, etc.) into local exhaust devices.
- Properly label and store all chemicals. Use secondary containment at all times.
- Put chemical waste in appropriately labeled receptacles and follow waste disposal procedures your Department.
- Dispose of within six months
- In the case of an accident or spill, report immediately and follow emergency response procedures for the specific material. Information on minor chemical spill mitigation may also be referenced in CHP.

- For general guidance, the following situations should be addressed:
 - Eye Contact: Promptly flush eyes with water for a prolonged period (15 minutes) and seek medical attention.
 - Skin Contact: Promptly flush the affected area with water and remove any contaminated clothing. If symptoms persist after washing, seek medical attention.
 - Clean-up: Call Safety 2-4996 or 2-1950 before cleaning up any spill to ensure the appropriate protective equipment will be used and proper disposal of cleaned up materials will occur.

Equipment Storage and Handling:

- Use equipment only for its designed purpose.
- Store laboratory glassware with care to avoid damage. Use extra care with Dewar flasks and other evacuated glass apparatus; shield or wrap them to contain chemicals and fragments should implosion occur.
- Use properly functioning fume hoods, glove boxes, or other ventilation devices for operations which might result in release of toxic chemical vapors or dust. Preventing the escape of these types of materials into the working atmosphere is one of the best ways to prevent exposure.
- Report improper function fume hoods immediately.
- Keep hood sash as low as possible at all times, except when adjustments within the hood are being made.
- Keep fume hood free of unnecessary equipment and containers.
- Leave the fume hood "on" even when it is not in active use if toxic substances are in the fume hood or if it is uncertain whether adequate general laboratory ventilation will be maintained when it is "off".
- Secure gas cylinders upright, with cap on valve.

Laboratory Operations:

- Keep the work area clean and uncluttered.
- Develop procedures for all work.
- Clean as you go. Upon finishing an experiment, immediately break down all equipment, wash and place in secure location. Return all chemicals back to shelves.
- Seek information and advice about hazards, plan appropriate protective procedures, and plan positioning of equipment before beginning any new operation.
- If unattended operations are unavoidable, and have been approved by the PI/Laboratory Supervisor, place an appropriate sign on the door, leave lights on, and provide for containment of toxic substances in the event of failure of a utility service (such as cooling water).
- Be alert to unsafe conditions and ensure that they are corrected when detected.
- Receive both Introduction to Laboratory Safety and lab specific training prior to starting work in a lab.

UNSAFE LABORATORY HABITS

Personal Protective Equipment:

- Do not enter the laboratory without wearing appropriate clothing, including closed-toe shoes and full length pants, or equivalent. The area of skin between the shoe and ankle should not be exposed.
- Do not wear laboratory coats or gloves outside of the laboratory area.

Chemical Handling:

- Do not smell or taste chemicals.
- Do not allow release of toxic substances or fumes into cold or warm rooms, as these types of areas typically involve re-circulated atmospheres.
- Never use mouth suction for pipetting or starting a siphon.
- Do not dispose of any hazardous chemicals through the sewer system. These substances might interfere with the biological activity of waste water treatment plants, create fire or explosion hazards, cause structural damage or obstruct flow.

Equipment Storage and Handling:

- Do not use damaged glassware or other equipment, under any circumstances. The use of damaged glassware increases the risks of implosion, explosion, spills, and other accidents.
- Do not use improperly functioning fume hoods or glove boxes for hazardous chemical handling.
- Avoid storing materials in hoods and do not allow them to block vents or air flow.

Laboratory Operations:

- Never work alone on procedures involving hazardous chemicals, biological agents, or other physical hazards.
- Avoid unattended operations, if at all possible. Unattended operations require prior approval from the PI/Laboratory Supervisor.
- Do not engage in distracting behavior such as practical joke playing in the laboratory. This type of conduct may confuse, startle, or distract another worker.

Food/Drink:

- Do not eat, drink, smoke, chew gum, or apply cosmetics in areas where laboratory chemicals are present; wash hands before conducting these activities.
- Do not store, handle, or consume food or beverages in storage areas, refrigerators, glassware or utensils which are also used for laboratory operations.
- Wash areas of exposed skin well before leaving the laboratory.