

LABORATORY SAFETY

pub# CSU1

In a work environment, such as a laboratory, personnel are in constant contact with chemicals. Therefore, there is a potential for exposure to these chemicals and their hazards. The following is a brief summary of some simple steps to reduce the exposure to chemicals and to keep their hazards to a minimum.

Hazardous material safety

- ◆ Familiarize yourself with hazard symbols, numerical hazard codes, etc.
- ◆ Before opening any chemical bottle, read the label and follow all recommended safety precautions. Pay particular attention to personal protective clothing and equipment recommendations.
- ◆ Use the recommended personal protective clothing and equipment (e.g. goggles, face shields, etc.). These may feel or look cumbersome but they could prevent serious injuries.
- ◆ Make sure that the protective gloves worn are resistant to the chemicals used. Check gloves for holes or tears prior to and during use.
- ◆ Wear long-sleeved, knee-length laboratory coat. Loose fitting coats are preferable especially in the event of a spill. Laboratory coats should be buttoned-up for complete protection.
- ◆ Obtain and read the Material Safety Data Sheet (MSDS) for chemicals with which you are unfamiliar.
- ◆ All procedures producing dust, aerosols, or using volatile chemicals must be performed in a fume hood.
- ◆ Place equipment at least four (4) inches behind the front edge of the hood or as far back as practical. Do not block air baffles.
- ◆ Store highly volatile chemicals in the fume hoods. Keep caps closed.
- ◆ When a reaction has been mixed, let it stand for a short time. This will help to minimize aerosols.
- ◆ Store chemicals in appropriate chemical storage cabinets (e.g. flammable storage cabinets).



- ◆ Label all containers used for transfer of chemicals if they are not intended for immediate use.
- ◆ Use a "first in/first out" system for stock keeping.
- ◆ Segregate incompatible chemicals in storage.
- ◆ Minimize the inventory of chemicals on benches. This will substantially reduce the potential for spills.
- ◆ Store flammables away from sources of heat or ignition. (See: Chemical Safety Update #CSU4).
- ◆ Do not repackage flammable liquids in plastic or glass containers. If removed from original container, put flammable liquids in explosion-proof cans.
- ◆ Know the location of emergency deluge shower and eye washes.
- ◆ Make sure all containers are tightly closed before you return them to storage.
- ◆ Do not store picric acid in freezers. Water added to stabilize picric acid will be lost in sublimation.
- ◆ Do not store chemicals or waste on open floors; instead, use a secondary containment system (e.g. large plastic trays).
- ◆ Keep all chemical containers closed at all times.

General laboratory safety

- ◆ Examine all electrical cords periodically and replace frayed cords.
- ◆ As you replace equipment consider ordering equipment with improved safety features (e.g. a heating mantel or block instead of an open flame).
- ◆ Organize your chair, desk or work place so that in the event of an earthquake you are removed from hazards. Arrange the laboratory such that no hazards are present along the exit paths.
- ◆ Keep all exits and aisles free of obstruction. Good housekeeping avoids accidents and eases clean up in the event of a spill.
- ◆ Do not bypass any safety interlock systems.
- ◆ Label equipment which is "HOT" or "VERY COLD" so that others will be warned.
- ◆ Do not use unstable, tall metal bookcases. Have all such items seismically attached to the walls.
- ◆ Keep laboratory doors shut when laboratory is unoccupied.
- ◆ Secure all cylinders (See Chemical Safety Update #CSU2).