SAFETY AWARENESS IN SCHOOL CHEMISTRY LABORATORIES – GENERAL PRACTICE GUIDELINES

NOTE: Always check state and local regulations for more specific requirements.

ALTERNATIVE ACTIVITIES TO REDUCE RISKS

- ✓ • Reduce risks by using dilute substances rather than concentrates.
- ✓ • Use micro/semi-micro techniques instead of macro-techniques.
- ✓ • Use films, videotapes, and other methods rather than experiments involving hazardous substances.
- ✓ • Substitute non-hazardous procedures, especially utilizing materials that do not contain heavy metals, i.e. mercury, silver, etc., minute concentrations of metals in waste material will classify that material as a hazardous waste.
- ✓ • Undertake all substitutions with caution. Request assistance if questions involving substitutions or alternative methods arise.

SAFE WORK HABITS

- ✓ • Never work alone in a science laboratory or storage area.
- ✓ • Never eat, drink, smoke, chew gum or tobacco in a science laboratory or storage areas. Do not store food or beverages in the laboratory environment.
- ✓ • Never pipette by mouth.
- ✓ • Wash hands before and after work in a science laboratory, and after spill cleanups.
- ✓ • Restrain loose clothing (e.g. sleeves, full cut blouses, neckties etc.), long hair and dangling jewelry.
- ✓ • Tape all Dewar flasks.
- ✓ • Never leave heat sources unattended (e.g. gas burners, hot plates, heating mantles, sand baths, etc.).

- ✓ • Do not store reagents and/or apparatus on lab bench, and keep lab shelves organized.
- ✓ • Never place reactive chemicals (in bottles, beakers/flasks, wash bottles, etc.) near the edges of a lab bench.
- ✓ • Use a fume hood when working with volatile substances.
- ✓ • Never lean into the fume hood.
- ✓ • Do not use the fume hood as a storage area.
- ✓ • Obtain and use the Material Safety Data Sheets (MSDS) for each chemical before beginning any experiment.
- ✓ • Analyze new lab procedures in advance to pinpoint hazardous areas.
- ✓ • Analyze accidents to prevent repeat performances.
- ✓ • Protection should be provided not only for the lab worker but also for the lab partner working nearby.
- ✓ • Do not mix chemicals in the sink drain.
- ✓ • Always inform coworkers of plans to carry out hazardous work. Make certain all laboratory personnel are aware of the appropriate emergency response procedures in the event of an accident or unforeseen occurrence.
- ✓ • Record who worked with what, when, and for how long in order to allow meaningful retrospective chemical exposure evaluations if necessary.
- ✓ • Conduct regular in-house safety and health inspections with an emphasis on improvement rather than guilt.
- ✓ • Inform laboratory staff about the appropriate procedures in the event of an emergency.
- ✓ • Have actions pre-planned in the event of an emergency (e.g. what devices should be turned off, which escape route to use, a personnel meeting place outside the building, re-entry procedures, etc.).
- ✓ • Review evacuation procedures following regular fire drills. Modify evacuation routes or procedures as may be appropriate to minimize hazards.

- ✓ • Laboratory personnel should have recent first aid and CPR training.

FACILITIES AND EQUIPMENT

- ✓ • Have separate containers for trash and broken glass. Make certain the broken glass container is plainly marked. Unidentified broken glass inside of regular trash may be a hazard to custodial personnel.

- ✓ • Never block any escape routes with cads, boxes, etc. Plan alternate escape routes in the event of an emergency.

- ✓ • Never block a fire door open.

- ✓ • Keep all chemical cabinets closed when not in use.

- ✓ • Keep chemical cabinets and storage areas locked.

- ✓ • Never store materials in lab or storage area aisles.

- ✓ • All moving belts or pulleys should have safety guards. Inspect all electrical equipment regularly. Discard any equipment with faulty or frayed cords or plugs.

- ✓ • Instruct all laboratory personnel and students in the proper use of the eyewash fountain, emphasizing rolling of the eye-ball, and turning the eyelids “inside-out”.

- ✓ • Ensure that all eyewash fountains will supply at least 15 minutes of water.

- ✓ • Regularly inspect and observe condition of ventilation and exhaust equipment in storage rooms and laboratories. Report any mechanical problems immediately.

- ✓ • Regularly inspect fire blankets for rips and holes and keep records of these inspections.

- ✓ • Regularly inspect safety showers and eyewash fountains and keep records of these inspections.

- ✓ • Keep up-to-date emergency phone numbers posted next to the phone.

- ✓ • Place fire extinguishers near escape routes, not in a “dead-end”.

- ✓ • Regularly check hood for proper draft, report any mechanical problems with draft hoods and ventilation equipment Discontinue use of draft hood or other ventilation equipment for procedures utilizing volatile materials until necessary repairs are made.

- ✓ • If compressed gas cylinders are used, make certain that the cylinders are properly secured when in use, and transported only on an approved cylinder dolly. Be certain that all appropriate storage and use restrictions are followed if compressed gas cylinders are used or stored at your facility.

- ✓ • Use chemical storage shelves with lips keep containers from slipping off. Small trays of other modifications may be sued to substitute. Never use stacked boxes in lieu of shelves.

- ✓ • Only explosion-proof refrigerators may be used in chemical storage areas.

- ✓ • Have appropriate equipment and materials available for spill control; replace when it becomes dated.