

SECTION 02

SAFE WORK PRACTICES

The following safe work practices are adopted from the Chemical Hygiene Plan in effect within the laboratory. Analyst should be familiar with the procedures when mixing, applying and transporting any type of chemicals as well as daily operations of equipment. Numerous safety factors must be considered in all aspect of laboratory work and it will be the responsibility of the analyst to review the following procedures to avoid serious injury while conducting analyses.

General Requirements:

1. The Supervisor and/or the Section Safety Officer **must** be notified of all accidents and injuries which may occur within the section.
2. **Material Safety Data Sheets** (MSDS) are available for each chemical and powder utilized within the section and should be consulted prior to chemical usage and if accidents occur for first-aid or in the event of chemical spills (See MSDS Procedures). Operations Manuals are located in the reference area and should be consulted prior to and during operation of equipment. The analyst must be aware of the location of this information.
3. Each Procedure in this manual contains a separate section on Safety Concerns and this information should be reviewed prior to utilizing a particular chemical mixture or equipment.

SAFE PRACTICES:

General precautions which should be followed for the handling and use of all chemicals are:

1. Skin contact with all chemicals should be avoided.
2. All employees should wash all areas of exposed skin prior to leaving the laboratory.
3. Mouth suction for pipetting or starting a siphon is prohibited.
4. Eating, drinking, smoking, gum chewing, or application of cosmetics in areas where laboratory chemicals are present is prohibited. These areas have been posted. Hands should be thoroughly washed prior to performing these activities.
5. Storage, handling and consumption of food or beverages is prohibited in storage areas, refrigerators, glassware or utensils also used for laboratory operations.
6. Any chemical mixture shall be assumed to be as toxic as its most toxic component.
7. Substances of unknown toxicity shall be assumed to be toxic.
8. Laboratory employees shall be familiar with the symptoms of exposure for the chemicals with which they work and the precautions necessary to prevent exposure.
9. The intent and procedures of the Chemical Hygiene Plan shall be continuously adhered to.
10. In all cases of chemical exposure, neither the Permissible Exposure Limits (PELs) of OSHA or the Threshold Limit Values (TLVs) of the American Conference of Governmental Industrial Hygienists (ACGIH) shall be exceeded. These levels are indicated on the **Material Safety Data Sheets**.
11. The engineering controls and safety equipment in the laboratory shall be utilized and inspected at least quarterly.
12. Specific precautions based on the toxicological characteristics of individual chemicals shall be implemented as deemed necessary by the Chemical Hygiene Officer.

WORK AREAS:

Each employee shall keep the work area clean and uncluttered. All chemicals and equipment shall be properly labeled. At the completion of each work day or operation, the work area shall be thoroughly cleaned and all equipment properly cleaned and stored. In addition, the following procedures shall apply to the use of laboratory equipment:

1. All laboratory equipment shall be used only for its intended purpose.
2. All glassware will be handled and stored with care to minimize breakage; all broken glassware will be immediately disposed of **in the broken glass container**.
3. All evacuated glass apparatus shall be shielded to contain chemicals and glass fragments should implosion occur.
4. Labels shall be attached to all chemical containers, identifying the contents.
5. Waste receptacles shall be identified/labeled as such.
6. All laboratory equipment shall be inspected on a periodic basis and replaced or repaired as necessary.

PERSONAL WORK PRACTICES:

1. Laboratory supervision must ensure that each employee knows and follows the rules and procedures established in the Chemical Hygiene Plan.
2. All employees shall remain vigilant to unsafe practices and conditions in the laboratory and shall immediately report such practices and/or conditions to the laboratory supervisor. The supervisor must correct unsafe practices and or conditions promptly.
3. Long hair and loose-fitting clothing shall be confined close to the body to avoid being caught in moving machine/equipment parts.

4. Use only those chemicals appropriate for the ventilation system.
5. Avoid unnecessary exposure to all chemicals by any route.
6. Do not smell or taste any chemicals.
7. Encourage safe work practices in coworkers by setting the proper example.
Horseplay is strictly forbidden.
8. Seek information and advice from knowledgeable persons, standards and codes about the hazards present in the laboratory. Plan operations, equipment and protective measures accordingly.
9. Inspect personal protective equipment prior to use, and wear appropriate protective equipment as procedures dictate and when necessary to avoid exposure.

FUME HOODS:

The following work practices shall apply to the use of hoods:

1. Confirm adequate hood ventilation performance prior to opening chemical containers inside the hood. An inward flow of air can be confirmed by holding a piece of paper at the face of the hood and observing the movement of the paper.
2. Keep the sash of the hood closed at all times except when adjustments within the hood are being made. At these times, maintain the sash height as low as possible.
3. Storage of chemicals and equipment inside the hood shall be kept to a minimum.
4. Minimize interference with the inward flow of air into the hood.
5. Leave the hood operating when it is not in active use if hazardous chemicals are contained inside the hood or if it is uncertain whether adequate general laboratory ventilation will be maintained when the hood is non-operational.

SPILL CONTROL PROCEDURES:

Spills pose a significant threat to the health of the laboratory staff. Caution should be taken in cleanup procedures. Those procedures listed below are for spills of any size. Use the **Spill Control Station** located in the **Processing room**. For any type of chemical spill use **rubber gloves, filtered air mask, goggles or face shield, and polyethylene coveralls with booties**. The above listed items and the spill control mats and pillows are located inside the spill control station.

1. Contain small spills with **WHITE ABSORBENT MATS**.
2. Contain large spills with spill pillows.
3. Use **WHITE** spill pillows for any chemical spill except **HYDROFLUORIC ACID**.
4. Use **BROWN** spill pillows for **HYDROFLUORIC ACID**. (Be sure to have a filtered mask when using the brown pillows because of toxic gases produced when the pillow absorbs the chemical.)
5. Dispose of pillows in hazardous waste bag provided in the spill control station.
6. Identify chemical with the tags provided in the spill control station.
7. Notify the Section Safety Officer or Assistant Supervisor immediately for documentation and disposal of chemical waste.

**POISON CONTROL CENTER:
1-800-848-6946**