Broward College CHEMICAL SPILL PLAN

APPENDIX C of the Chemical Hygiene Plan:

Preparation: An important part of the CHP is to prepare for all possible types of spills ahead of time. It is necessary to be certain that anticipated necessary spill control materials are ready at hand and that all faculty and staff know how to use the spill control kits.

General Procedures:

1. Immediately alert others in the area that a spill has occurred. If the spill is large, notification of Campus Security, the Department Head and the Director of Health and Safety should be done at once. The Director of Health and Safety will determine if City Environmental Services should be notified for clean up and disposal. Consult the SDS for spill control procedures specific to the spilled substance.

2. The following procedures should be followed for chemicals spilled on the skin:

   A. For chemicals spilled over a large area of the body use the safety shower. Seconds may count and no time should be wasted because of modesty. However, care must be taken not to spread the chemical on the skin especially to the eyes, mouth, or nose. Safety goggles should be kept on until certain that the head area is rinsed. If the eyes are affected, their rinsing should begin immediately. Immediately flood the affected body area with cold or tepid water for a minimum of fifteen minutes. Resume if pain returns. If appropriate, wash off the chemicals with a mild detergent and water. Do not use neutralizing chemicals, ointments, creams, lotions or salves.

   Medical attention must be received as soon as possible. Notify Campus Security and Department Head immediately to begin the summoning of medical help. Make certain that the medical personnel understand exactly what chemicals are involved so that they may administer proper treatment. The exact chemical name must be supplied to avoid any confusion.

   B. For chemicals spilled over small areas of the skin, immediately flush with cold or tepid water for no less than fifteen minutes. If there is no visible burn, wash the affected area with a mild soap and water. Remove any jewelry or affected clothing to insure the removal of any residual materials. Call Campus Security to report the incident and seek medical help immediately if any delayed reaction is noted.

   C. For chemicals spilled or splashed into the eyes, irrigation must be started immediately using an eye wash fountain. Flush the eyes with copious amounts of water under gentle pressure, preferably tepid, for a minimum of fifteen minutes. Check for contact lenses, and if possible, have the wearer remove them.

However, contact lenses may be difficult to remove, and the essential irrigation must not be delayed.

Forcibly hold the eye lids open to wash thoroughly behind the eyelids. The injured person should be encouraged to rotate the eyeballs as much as possible so that all available surfaces may be washed. Campus Security must be called immediately to insure prompt medical attention, regardless of the severity of the injury.

D. Two chemicals require particular attention if these are spilled on the skin. These chemicals are bromine and hydrofluoric acid. The emergency treatment for these are detailed below.

For bromine on the skin, flush with cold water as soon as possible. After thorough flushing, apply a compress saturated with a dilute solution of sodium thiosulfate. No other chemicals should be used as a first aid or as a clean up agent on the skin. Campus Security must be notified as soon as possible to report the incident. 911 should be called for immediate medical attention.

Hydrogen fluoride vapor and hydrofluoric acid solution are both toxic posing a very serious hazard. The substance is absorbed readily into the skin and deep into body tissues, causing long-term and excruciating pain and burns that are slow to heal. Prompt removal of contaminated clothing is essential. The flushing should be continued until any whitening of the skin has disappeared. Swath the injured person with soaking wet, iced cloths. Wrap to protect from shock and exposure. Under no circumstances should an ointment be applied. Although immediate pain is felt from the concentrated acid, contact with more dilute solution of the acid may cause no symptoms until hours after the exposure.

In all cases of body contact with hydrogen fluoride or hydrofluoric acid, notify Campus Security and obtain immediate medical help. Simple flushing with water does not remove the substance from deep within body tissue. Additional treatment is required. Unless it is absolutely necessary, the use of hydrogen fluoride or hydrofluoric acid should be avoided.

3. If it appears that the spill is too large to be easily contained and cleaned up, call Campus Security, the Department Head, and the Director of Health and Safety as soon as possible. The Director of Health and Safety will notify City Environmental Service, Inc., who will do the clean up and disposal of the hazardous material. If there is no fire hazard and the material is not particularly volatile or toxic, clean it up as soon as possible. To facilitate cleaning up liquids, use an absorbent material that will neutralize the material.

Chemical Spills

1. Caustic Spill Clean Up: the following are instructions for neutralizing, absorbing, and facilitating the proper clean up and disposal of liquid alkali spills:
    a. Safety
        a. Wear goggles and gloves
        ii. Provide proper ventilation
        iii. Wash thoroughly after handling

    b. Directions
        i. Carefully dilute alkali spills of over 50% concentration with an equal volume of water.
        ii. Open spill Pac1 and carefully sprinkle contents around (diking spilled area) and into diluted alkali spill.
        iii. Add water as required to control heat evolution.
        iv. Observe color change from blue to pink when neutralized chemical spill.
        v. Add additional alkali neutralizer, if required.
        vi. Open Spill Pac 2 and sprinkle contents over neutralized chemical spill.
        vii. Mix thoroughly using plastic scoop until all liquid is absorbed.
        viii. Scoop up neutralized mixture and dispense in hazardous disposal bag. Label bag with the name of the spilled chemical.
        ix. Use neutral Base spray if caustic spill splashed on cabinets or hard to reach locations. Follow directions on spray bottle to neutralize base.
        x. Leave lab manager a detailed account of the incident, including what chemical spilled and how the accident occurred.
2. Acid Spill Clean Up: the following are instructions for neutralizing, absorbing, and facilitating the proper clean up and disposal of liquid acid spills.
    a. Safety
        i. Wear goggles and gloves
        ii. Provide proper ventilation
        iii. Wash thoroughly after handling

    b. Directions
        i. Open Spill pac and sprinkle contents around (diking spilled area) and into acid spill area.
        ii. Mix thoroughly using plastic scoop until the color change from pink to dark blue has developed.
        iii. Additions of small amounts of water aid in obtaining complete neutralization.
        iv. Add additional spill pacs, if necessary, to obtain neutralization (dark blue color persists)
        v. Scoop up neutralized mixture and dispense in hazardous disposal bag. Label bag with the name of the spilled chemical.

vi. Use Neutra Acid spray if acid spill splashed on cabinets or hard to reach location. Follow directions on spray bottle to neutralize acid. Note color change for neutralization.

vii. Leave lab manager a detailed account of the incident, including what chemical spilled and how the accident occurred.

3. If volatile, flammable, or toxic material is spilled, immediately warn everyone to extinguish all flames and to turn off all electrical equipment. All experiments should be discontinued and apparatus shut down. Local evacuation of the area should occur as quickly as possible. In the event of a spill producing flammable or harmful fumes, open all available windows, turn on all fume hoods and exhaust fans. If possible, shut down the air handlers to prevent the fumes from entering other areas. Be certain all possible ignition sources have been eliminated. The area must not be re-occupied until certified safe by City Environmental Services or other approved authority. Campus Security should be notified as soon as possible. The clean up should be undertaken only by trained City Environmental staff wearing appropriate protective clothing such as gloves, goggles, face mask, apron, and if necessary, a breathing apparatus.

4. Many small liquid spills (up to 500 ml depending on the liquid) can be cleaned up using paper towels, a suitable absorbent, or a spill cleanup kit. Remember that paper towels can increase the surface area and evaporation rate of flammable materials, increasing the fire hazard. Do not leave paper towels or other materials used to clean a spill in open trash cans. Dispose of them properly.

5. Most solid spills can be brushed up and disposed of in an appropriate solid waste container. Care must be taken to avoid reactive combinations of solid wastes. When in doubt, consult the SDS of any spilled solid to be aware of the necessary safety precautions to be taken with the material. Goggles, gloves and an apron should be worn when cleaning up spills.

6. Acid Chlorides – Acid chlorides are potent lachrymators. For such spills, use calcined absorbent or kitty litter. Appropriate safety equipment must be worn when cleaning up these materials. Avoid contact with the skin and inhalation of the vapors.

7. Hydrogen Peroxide, 30% - For spills of less than 500 mL, dilute with water and sponge up the spill; For spills over 500mL, dilute with water and use a spill control pillow according to the dispenser box directions. Wear appropriate safety equipment and clothing. Concentrations of hydrogen peroxide over 30% will not be allowed in the department.

8. Mercury- Because of the high toxicity of mercury vapor, spilled mercury must be immediately and thoroughly cleaned up using a mercury cleanup kit. Mercury spilled into floor cracks and other areas with difficult accessibility can be made non-volatile with zinc dust. Steps must be taken to clean this amalgam up using a Hg vacuum.

Most mercury spills result from broken thermometers containing mercury stems. If at all possible, a non-mercury containing thermometer should be used.

1. Broken Thermometers – Mercury Clean Up

a. CAUTION: Mercury System is to be used on mercury spills only. Do not attempt to reuse spent Hg Absorb. Avoid skin contact.

b. Instructions

i. Small Hg Spills: use Hg Absorb Merc jar to remove small drops of Hg from surfaces.

I. Unscrew jar and lift lid with attached sponge.

II. Use just enough water (about 2ml) on the surface of the sponge to moisten evenly. Too much water may reduce the ability of the sponge to pick up Hg.

III. Spread the water evenly with a gloved finger. After one minute, slowly move the sponge over the surface to be cleaned.

IV. When all the mercury is amalgamated to the sponge, screw the sponge attached lid back onto the jar and properly dispose of all contaminated items.

ii. Large Hg Spills

I. Follow detailed instructions and precautions on each bottle within this kit.

II. Sprinkle Hg Absorb powder over the surface of Hg.

III. Wet the powder with water.

IV. Work Hg Absorb powder into Hg with scraper to form an amalgam.

V. Scoop up residual amalgam and place in disposal bag.

VI. Open Hg Absorb Merc Jar.

VII. Place enough water on sponge surface to evenly moisten.

VIII. Slowly move the cap, with the activated sponge side down, over the surface to be cleaned.

IX. Screw cap back onto Merc jar and place it in the red hazard container.

X. Sprinkle Mercury Indicator Powder lightly over spill-area and let stand for awhile. If powder turns brown in color, then there is Hg present.

XI. Sprinkle Hg Vapor Absorbent into any cracks or areas inaccessible to physical cleanup, to absorb vapors.

iii. Disposal:

I. Place all broken thermometers, gloves, paper towels, etc., in red hazard container. Be sure to tightly close.

II. Return red hazard container and Hg Spill Kit to their proper locations.

III. Fill out broken equipment form with description of incident and leave for Lab Manager.