

# BROWARD COLLEGE CHEMICAL HYGIENE PLAN (CHP)

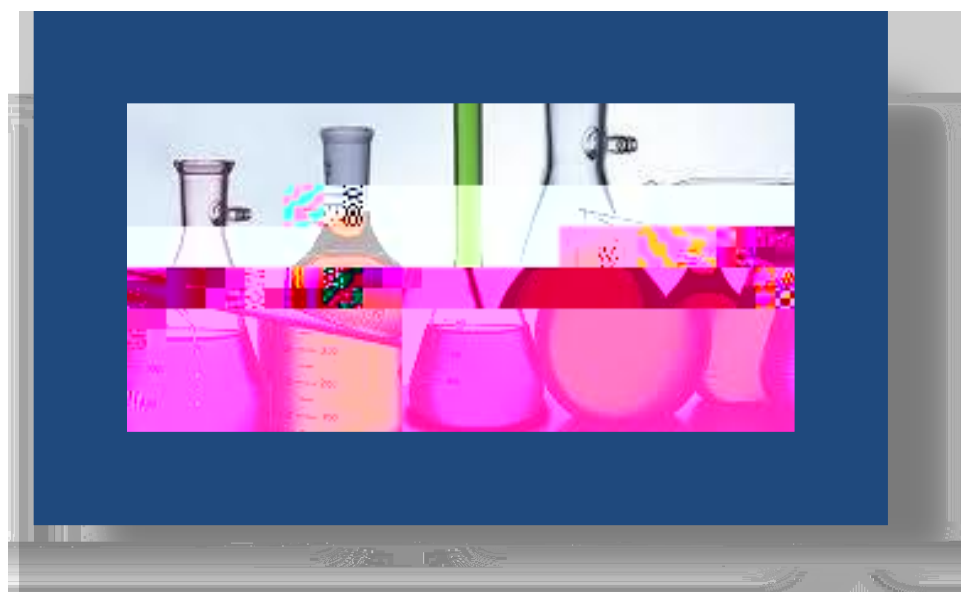


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# CHEMICAL HYGIENE PLAN

## GENERAL:

The U.S. Department of Labor Occupational Safety and Health Administration (OSHA) Office has ruled that laboratory safety is a legal responsibility. Federal Regulation 29 CFR Part 1910.1450 is OSHA's final standard which applies to all laboratories that use hazardous chemicals in accordance with the definition of Laboratory used in the Standard.

The following Chemical Hygiene Plan (CHP) has been formulated in response



- a. The chemicals' hazards, as determined from the MSDS and other appropriate references.
- b. Appropriate safeguards for using that chemical, including personal protective equipment.
- c. The location and proper use of emergency equipment.
- d. How and where to properly store the chemical when it is not in use.
- e. The proper methods of transporting chemicals within the facility.
- f. Appropriate procedures for emergencies, including evacuation routes, spill cleanup procedures and proper waste disposal.

#### Personal Safety

1. Wash promptly whenever a hazardous chemical has contacted the skin and remove contaminated clothing.
2. Do not directly inhale chemicals to identify them
3. Do not use mouth suction to pipet anything; use suction bulbs.
4. Wash hands well with soap and water before leaving the laboratory; do not wash with organic solvents.

3. When working with corrosive, allergenic, sensitizing, or toxic liquids, wear gloves known to be impervious to that chemical.
4. Wear clothing and protective equipment as appropriate which minimizes skin exposure.
5. Whenever exposure by inhalation is likely to exceed the threshold limits described in MSDS's, use a hood. Consult with your supervisor before doing any such work.

#### Housekeeping

1. Access to emergency equipment, showers, eyewashes, and exits should never be blocked by anything, not even a temporarily parked chemical cart.

6. Any employee experiences symptoms from exposure to hazardous chemi

Corrosive chemicals are handled with all proper safety precautions, including wearing both safety goggles and face shield, gloves known to be resistant to permeation or penetration, and a laboratory apron or laboratory coat as appropriate.

#### Control Measures and Equipment

Chemical safety is achieved by continual awareness of chemical hazards and by keeping the chemical under control by using precautions, including engineering safeguards such as hoods. Laboratory personnel should be familiar with the precautions to be taken, including the use of engineering and other safeguards. Laboratory supervisors should be alert to detect the malfunction of engineering and other safeguards. All engineering safeguards and controls must



g. Calibrate fume hoods to manufacturer's specification once/year.

- h. Hoods are never to be used as permanent storage areas for chemicals, apparatus, or other materials.

#### Flammable-Liquid Storage

1. Fire-hazard chemicals are kept in original containers or in metal safety cans designed for such storage. The cans are used only as recommended by the manufacturer, including the following safety practices:
  - a. Never disable the spring-loaded closure.
  - b. Always keep the flame-arrestor screen in place; replace if punctured or damaged.
  - c. Such cans must be properly labeled to identify their contents and properly grounded.
2. Cabinets designed for the storage of flammable materials are properly used and maintained. The manufacturer's information is followed as well as the following safety practices:
  - a. Store only compatible materials inside a cabinet.
  - b. Do not store paper or cardboard or other combustible packaging material in a flammable-liquid storage cabinet.
  - c. The manufacturer establishes quantity limits for various sizes of flammable-liquid storage cabinets; do not over-load a cabinet.
  - d. Refer to 6A-2.078 for handling, storage and quantity restrictions.

#### Eyewash Fountains and Safety Showers

1. All laboratories where chemicals are used shall be equipped with eyewashes and safety showers. These are located so they can be reached from any point in the laboratory, as specified in ANSI Z358.1 and 6A-2.097.
2. The functioning of eyewash fountains and safety showers and measurement of water flow shall be checked periodically. Any facility that does not meet the water flow requirements of ANSI Z358.1 will be promptly repaired.
3. Access to eyewash fountains and safety showers will not be restricted or blocked by temporary storage of objects or in any other way.

#### Vapor Detection

Odor will not be used as the primary means of determining that inhalation exposure limits are not being exceeded. If there is reason to suspect that a toxic chemical inhalation limit might be exceeded, whether or not a suspicious odor is noticed, the supervisor will be notified, the area evacuated, and the fire department called.

Procedure for Carcinogens, Reproductive Toxins, Substances that Have a High Degree of Acute Toxicity, and Chemicals of Unknown Toxicity

It is the policy of the BC Science Department to restrict the use of any carcinogens reproductive toxins, and substances that have a high degree of toxicity to an amount less than 10 mg.

### **III. PERSONNEL RESPONSIBILITIES**

The following personnel are responsible for implementation of the Chemical Hygiene Plan:

#### **ORGANIZATION**

#### **LEVEL 1**

ASSOCIATE DEANS – CHEMICAL HYGIENE OFFICER\* - FACULTY TEACHING  
LABORATORY COURSES - LABORATORY MANAGERS

a) Visible management of equipment and area.





present control measures and safety procedures, and if necessary to develop recommendations that will prevent or mitigate any future exposures.

#### D. PHYSICIAN NOTIFICATION

A copy of the security report, exposure assessment, & air sampling or monitoring results shall be provided to the physician when available.

#### E. PHYSICIAN'S REPORT

The Human Resources Department will follow up with the physician to obtain the required written opinion and report to the DIRECTOR OF SAFETY & CHIEF FIRE OFFICIAL. The physician's written opinion shall include:

1. Any recommendation for further medical for further medical follow-up.
2. The results of the examination and any associated tests.
3. Any medical condition which may be revealed in the examination which may place the employee at increased risk as a result of exposure to a hazardous chemical found in the work place.
4. A statement that the employee has been informed by the physician of the results the consultation or medical examination of any medical condition that may require further examination or treatment.
5. No specific findings of diagnoses unrelated to occupational exposure.

#### F. RECORD MAINTENANCE

The Human Resources Department and the DIRECTOR OF SAFETY & CHIEF FIRE OFFICIAL shall maintain a copy of the physician's written opinion and all materials relating to the exposure as required by local, state and federal regulation.

#### G. EMPLOYEE NOTIFICATION

Employees shall be notified by the Director of Safety & Chief Fire Official of the results of any medical consultation or examination with regard to any medical condition that exists or might exist as a result of overexposure to a hazardous chemical.

Within 15 working days of receipt of the results of any monitoring, the employee will be notified of those results.

## VIII. APPENDIX A: DEFINITIONS

**Contact-hazard Chemical** – Is so identified or described in the MSDS or on the label; is so identified or described in the medical or industrial hygiene literature; or is known or found to be an allergen or sensitizer.

**Corrosive Chemical** – Fits the OSHA definition of corrosive in Appendix A of 29 CDR 1910.1200; fits the EPA definition of corrosive (has a pH greater than 12 or less than 2.f; or is known or found to be corrosive to living tissue.

**Flammable Chemical** – In general, the flammability of a chemical is determined by its flash point, the lowest temperature at which an ignition

source can cause the chemical to ignite momentarily under certain controlled conditions. Chemicals with a flash point below 200 F (93.3 °C) will be considered “fire-hazard chemicals.”



APPENDIX B: GOGGLE TYPES  
**GOGGLE TYPES**  
**FACE SHIELD TYPE N**

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## APPENDIX C: CHEMICAL SPILL 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 DIRECTOR OF SAFETY & CHIEF FIRE OFFICIAL should be done at once. The Director of Safety & Chief Fire Official will determine if City Environmental Services should be notified for cleanup and disposal. Consult the MSDS 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 **(954)201-HELP** 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 **(954)201-HELP** 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

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

## 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

i. 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 pack 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 packs, 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 Neutral 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 MSDS 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 –

- 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.

## **APPENDIX D: EVACUATION PLANS**

There shall be two types of Evacuation plans:

1. General – All building occupants must evacuate.
2. Local – Occupants of a particular laboratory or room must evacuate.

3. Power interruption – If for any reason the fume hoods fail to operate while in use for hazardous materials, proceed with a local evacuation. Before leaving