

GRICE MARINE LABORATORY

1. EMERGENCIES

IMPORTANT NUMBERS :

COLLEGE OF CHARLESTON PUBLIC SAFETY	9-953-5611
POISON CONTROL CENTER	9-1-800-922-1117
HEALTH SERVICES	9-953-5520

a. INJURIES

- i. If anyone is injured, call CofC Public Safety immediately and perform first aid (if you are knowledgeable in it).
- ii. In life threatening situations, first call CofC Public Safety, then Health Services during the day. After 5:00 p.m., call CofC Public Safety.
- iii. Call the Poison Control Center for first aid for exposure to hazardous chemicals.
- iv. First aid kits are located in the middle of the hallways of the first and second floor of the main building and outside the Laboratory Manager's office in the annex.
- v. The Health Center of the College of Charleston is open Monday - Friday, 8:30 - 5:00. Phone: 9- 953-5520.
- vi. Include the appropriate MSDS sheet with any student being transported by EMS injured in a laboratory environment. MSDS sheets are located in the conference room on the first floor of the main building.

b. FIRES

- i. In the event of a small fire, attempt to put it out with a fire extinguisher first. For a larger fire, pull the fire alarm located near each exit or stairwell. Call CofC Public Safety at 9-953-5611 and evacuate **all** persons from the building.
- ii. There are fire extinguishers located throughout the building. If you do not know how to use this equipment, see the Laboratory Manager.

c. MAJOR CHEMICAL SPILLS

- i. In the event of a large spill of any hazardous chemical, evacuate the room, close the door if possible, pull the fire alarm to evacuate the building, then call CofC Public Safety at 9-953-5611.

d. EVACUATION PROCEDURES

- i. Leave the area in an orderly manner; walk, don't run; move well away from buildings. Do not use elevators! Make a count of your group in the assembly area.

2. STANDARD OPERATING PROCEDURES FOR CHEMICAL USE

In order to reduce employee exposure to hazardous chemicals and to assure that any exposure does not exceed the Permissible Exposure Limit (PEL) for that chemical, the following must be observed:

- a. Prior to the use of any chemical in the laboratory, first determine the PEL for that chemical as well as the specific hazards and precautions for that chemical. This information can be found in the MSDS files. Discuss with the Laboratory Manager how this chemical should be handled, what protective equipment to use, and how to dispose of any chemical waste. If this chemical is a carcinogen, reproductive toxin, or is known to be extremely hazardous, then follow the special

guidelines described in a later section. The use of radioactive substances is described in a separate protocol.

- b. Hazardous chemicals with PEL's of 50 ppm or lower must be used in an operating fume hood; examples are concentrated hydrochloric acid, chloroform, benzene, and naphthalene.

Hazardous chemicals with PEL's higher than 50 ppm should be poured from their stock containers in the fume hood and then the smallest possible amount is taken outside the hood. These small amounts should be used in a covered container whenever possible. Use a container with a narrow opening, such as an Erlenmeyer flask covered with parafilm or a stoppered reagent bottle. Keep your face away from the container opening and always ensure that there is adequate ventilation in the laboratory. If the ventilation system is not working, then volatile chemicals cannot be used in the laboratory.

- c. If there is a reason to believe that exposure to a specific chemical routinely exceeds the "action level" or PEL for that chemical, then the college is required to monitor the exposure to that chemical according to OSHA guidelines and inform the employee of monitoring results within 15 days.
- d. Safety goggles must be worn when working with any hazardous liquid, e.g., concentrated acids or bases. In addition, gloves and a lab coat must be worn when working with any hazardous chemical. An apron or lab coat that protects body or clothing exposure to these acids shall be worn at all times when working with that chemical.
- e. Do not eat, drink, or smoke in any laboratory; also, wash your hands after working with chemicals.
- f. Do not smell, taste, or touch any chemical.
- g. Do not pipet any hazardous liquid by mouth.
- h. All labs are equipped with eyewash stations marked by a sign. If any chemical gets into your eyes, flush both eyes with a gentle stream of water for at least 15 minutes. Use thumb and index finger to hold each eye open. If possible, wash hands thoroughly before placing them near eyes. Eyewash stations should be examined monthly for proper operation.
- i. If any chemical gets on your skin or clothing, remove the contaminated clothing and wash off the chemical with lots of water.
- j. When working with flammable chemicals, be certain there are no flames or sparks nearby. Remember, some flammable vapors are heavier than air and can travel along a counter top to a Bunsen burner 20 feet away.
- k. Do not work alone in a laboratory or chemical storage area.

3. LABELING AND STORAGE OF CHEMICALS

- a. Labels on incoming containers of chemicals should not be removed or defaced. Any MSDS sheets that arrive with chemicals should be given to the Laboratory Manager. MSDS sheets can be found in the Grice conference room/lounge.
- b. All chemical containers, including temporary ones, should have an accurate label of contents; this includes flasks and beakers. Use labeling tape and include all precautions and warnings from the original container. Containers with more than one type chemical shall be labeled with all the chemicals that are in that container. The chemical makeup and other proper name of the chemical(s) shall be written in permanent ink on the label on the container.
- c. All flammable chemicals should be stored in approved flammable storage cabinets.
- d. Acids should be stored in an acid cabinet under the sink or fume hood in each lab.
- e. Return all chemicals to the chemical storeroom or their proper storage location after use.
- f. Unlabeled chemical containers should be reported to the Laboratory Manager as soon as possible.

4. FUME HOODS

- a. Set fume hood sashes at 100 lineal feet per minute (LFM) for normal chemical use. Hood frames are marked accordingly.
- b. Always determine that a fume hood is working properly before using. Hang a tissue in front to observe the flow of air.
- c. If the flow of a fume hood does not seem adequate, notify the Laboratory Manager who will check the flow rate.
- d. Hoods not in use shall be closed in accordance with NFPA to one inch opening.

5. USE OF COMPRESSED GASES

- a. Before moving a tank of compressed gas, install the safety cap on the tank.
- b. Before using a tank of compressed gas, securely chain the tank to a lab bench.
- c. When installing a regulator on a tank, remember, flammable gases have left-handed threads.
- d. When opening the valve on a tank, remember, only open the valve about one-quarter turn; this is usually enough to achieve full pressure and allows for immediate shut-off in case of an emergency.
- e. When you are finished using a compressed gas for the day, always turn off the main valve. Before you remove a regulator, first bleed off the gas. If the gas is flammable, check that there are no ignition sources nearby.
- f. Do not store an oxygen cylinder near a flammable gas cylinder. NOTE: The valve and the regulator on an oxygen tank MUST be free from oil or grease. Oil on contact with oxygen or other oxidizers can be explosive.

6. CARCINOGENS, REPRODUCTIVE TOXINS AND EXTREMELY HAZARDOUS CHEMICALS

*OSHA has strict guidelines to carcinogen usage. All this should be referenced in the Guide for Laboratory Use of Chemical Carcinogens. This is located in the College of Charleston OSHA Manual, a copy of which is located in the conference room on the first floor of the main building.

Use of any chemical that is defined as a carcinogen or reproductive toxin or is suspected to be extremely hazardous must adhere to the following guidelines:

- a. Containers of these chemicals should be stored within a secondary container to trap any escaping powder or vapor.
- b. All work with these chemicals must be done in a "designated area." A designated area can be a fume hood or a portion of a hood or part of a lab counter. The designated area must be marked off and labeled with warning signs. It should be covered with absorbent paper. In addition, if the chemical is a liquid, the absorbent paper should be placed on a nonporous tray which is capable of containing any possible spill. When work is completed in that area, the area must be cleaned and decontaminated; see below.
- c. If the chemical being used is volatile, then the work must be done in an operating fume hood.
- d. All work with these chemicals requires a lab coat, gloves and goggles (if a liquid).
- e. Any spill of these chemicals will hopefully be contained by the absorbent paper and tray. Put contaminated paper in a container with a tight seal. Decontaminate any area of the spill with paper towels and a detergent solution. Put all contaminated materials in a sealed container. For a large spill, follow the guidelines below. See the Laboratory Manager for disposal of contaminated materials.
- f. If an employee must use one of these chemicals outside of a fume hood and if that chemical is volatile or if there is any possibility that the PEL for that chemical will be exceeded, then the employee must use an approved respirator. Any employee required to use an approved respirator

- g. must FIRST go through the College's program on respirator use.
- g. Regulated radioactive materials should only be handled by properly licensed personnel.

7. CHEMICAL SPILLS

- a. For cleanup of small spills, use paper towels or vermiculite absorbent. For large spills, use spill pillows as diking. Spill pillows are located in the mechanical room on the first floor (above the ice machine). If the chemical spilled is very hazardous and volatile, e.g., a gallon of hydrochloric acid or chloroform, then evacuate everyone from the room, seal it off and call CofC Public Safety (9-953-5611). If the spill is severe enough, evacuate the building by pulling the fire alarm. In any case where the PEL for a chemical might be exceeded by cleaning it up, then the cleanup must be done by the Fire Department's Hazardous Response Team.
- b. Use protective clothing and goggles when cleaning up a spill. Respirators can only be used by employees trained in their use. Leave the cleanup of hazardous materials to trained professionals.
- c. Any contaminated materials resulting from a spill should be sealed in a container and disposed of in accordance with Federal, State, and Local laws. See the Laboratory Manager.
- d. Clean up spilled water or broken glass immediately. There is a container for broken glass in each lab.
- e. For cleaning up mercury, e.g., from broken thermometers, collect the mercury in a container if possible. Do not allow the mercury to contact the skin. If not, sprinkle sublimed sulfur over the mercury. In 24 hours, the mixture can be swept up and discarded.

8. WASTE DISPOSAL

- a. Normally, toxic, corrosive or flammable substances should not be poured down the drain or placed in the trash; check the MSDS files and the Laboratory Manager for proper disposal. LIST EXACT CONTENTS AND QUANTITIES of all waste that is stored.
- b. Disposable petri dishes and other plastic items that are contaminated with cultures or blood should be autoclaved according to the instructions near the autoclave in room 207. Be sure to use indicating tape and label the autoclave bag with College of Charleston's address before discarding. When loading the autoclave bag in the sterilizer, put the bag in a metal container to catch any spills.
- c. All hazardous waste to be disposed of through the College of Charleston Hazardous Waste Contract shall be labeled and dated for the date it is declared a waste. Under no circumstances will unlabeled hazardous waste be accepted for disposal. Contact the Laboratory Manager for waste pickup.

9. INFORMATION AND TRAINING

- a. All lab employees will be trained in contents of the OSHA Laboratory Standard. Training will be given before the employee begins work in the labs and will include reading and discussing the Chemical Hygiene Plan. The employee will be given a copy of the plan and will sign a form stating that he or she has read and understood it.
- b. All students must have the lab safety regulations explained to them and as evidence that this procedure has been performed, sign a copy which will be kept on file by the department.
- c. Persons operating machinery must do so only after sufficient instruction.

10. MEDICAL CONSULTATIONS

- a. Whenever there is a significant chemical spill or release or exposure to a hazardous chemical, or

whenever an employee develops signs or symptoms associated with exposure to hazardous chemicals, then, that employee has the right to and the opportunity for a medical examination and evaluation. This will be provided by the College at no charge. Call CofC Public Safety (9-953-5611).