



Safety Guidelines
Department of Paper and Chemical Engineering
Miami University - Oxford, Ohio 45056

The following safety guidelines and procedures are addressed in this document.

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Emergency Numbers:

Emergency (Medical, Fire, Police)	9911
Building Maintenance	529-7000
Campus Security	529-2222
Paper and Chemical Engineering Dept. Office	529-0760
Oxford Fire Department	88-523-6324
Oxford Police Department	88-523-4321
Hospital	88-523-2111
Environmental Health & Safety Office	529-2829
Poison Control	81-800-872-5111

I. STUDENT SAFETY INSTRUCTION

Instructional Laboratory

1. Each student will receive two copies of the “Laboratory Safety” and “Eye Safety and Medical Information” sheet (attached,. They must read the colored copy, sign it (indicating their planned compliance), and return it to the instructor. The instructor gives them to the Departmental Staff, who keeps them on file in the laboratory for the semester. The student keeps a copy as a reference in their notebook.
2. Every student is strongly advised to visit the website (<http://csb.gov/index.cfm>), which is maintained by the U.S. Chemical Safety and Hazard Investigation Board and make use of the various resources (including videos and reports) available.

Student Employees

1. Each student employee must read and sign the “Laboratory Safety” sheet and the “Eye Safety and Medical Information” sheet before starting to work in the laboratory.
2. Student Employees are to know the location and operation of the laboratory safety equipment. (Fire Extinguishers, Safety Showers, Eyewash Fountains and Manufactures Safety Data Sheets)
3. Student employees are to know the location and use of chemical clean up materials. (Acid spill kit, Mercury spill kit, kitty litter)

_____Name (please print)

II. LABORATORY SAFETY PROCEDURES

Paper and Chemical Engineering Department –Miami University

The following rules must be followed to reduce risk of accident and injury in the laboratory.

1. Know the location and operation of safety equipment. This includes safety showers, eyewash stations, fire extinguishers, sinks, hoods, phones, and exits.
2. Know what to do in case of an accident. Report all accidents and hazardous situations, no matter how minor, to your instructor.
3. Eye protection must be worn at all times when entering laboratories, or laboratory areas, with a potential for physical or chemical hazards (these areas are posted accordingly). Such protection is required; by virtue of your presence in the laboratory, independent of the activities conducted therein. However, eye protection may not be required in certain areas of a laboratory, which have been designated by yellow tape on the floor.
4. Wear appropriate clothing. No bare feet, sandals, or open toed shoes are permitted in the department laboratories. Loose baggy clothing should be avoided. Long hair must be tied back. Wear aprons, lab coats, and gloves when appropriate.
5. NEVER bring food (or chewing gum) or beverages into the laboratory. Don't apply cosmetics. Do NOT smoke in the laboratory. Do not smell (unless instructed) or taste laboratory chemicals.
6. Handle Chemicals with Caution. Read labels carefully. Only take as much as you need. Leave bottles in their proper place. Clear up spills around balances immediately. Report major spills to the instructor (particularly broken thermometers).
7. Handle Equipment Properly. Do not use equipment until you have been instructed how to use it. This includes spectrometers, digesters, and other equipment.
8. Assemble apparatus according to instructions. Do not attempt to insert glass tubing or thermometers into rubber stoppers until your instructor has shown you the proper procedure. Do not use chipped or broken glassware. Place broken glassware into the proper container. If in doubt, ask your instructor. When heating test tubes take care not to point the open end of the test tube toward anyone.
9. Never perform any unauthorized experiments or procedures. Do not take chemicals, supplies, or equipment out of the lab area.
10. Dispose of chemicals properly, as instructed in the laboratory manual. Ask your instructor for the location of waste disposal bottles. Ask your instructor if you are unsure about proper disposal.
11. Clean your lab benches, put away all equipment and reagents, and wash your hands at the end of each work session.

I, _____ (print name) have read, understood, and agree to follow these safety rules and procedures. I agree to abide by any additional instructions, written or verbal, provided by my instructor.

STUDENT SIGNATURE

CLASS

DATE

_____ Name (Please print)

EYE SAFETY AND MEDICAL INFORMATION

Department of Paper and Chemical Engineering
Miami University Oxford, Ohio

EYE PROTECTION

Eye protection is required in all laboratories and where chemicals are stored and handled.

CONTACT LENSES

The use of contact lenses in the laboratory or where chemicals are stored and/or handled is **STRONGLY DISCOURAGED**.

It has been argued that contact lenses offer protection from damage by particles and chemicals. Nothing could be more erroneous. An eye that has received a chemical splash should be irrigated with water until the material has been completely washed out. This usually takes about 15 minutes. If a contact lens is in the affected eye, the chemicals may be drawn under the lens by capillary action where it cannot be reached by water washing. The lens must be removed to permit effective washing. Under the traumatic conditions with pain and fear as impediments it may be impossible for the victim or anyone else to remove the lens.

I do/ I do not (circle one) plan to wear contact lenses in the laboratory.

I have read and understand the information provided above.

Student's Signature

Date

MEDICAL INFORMATION

The Paper and Chemical Engineering Department faculty/staff should be aware of the following information concerning my medical/health status.

Person to contact in case of an emergency Emergency Phone #

III FACULTY RESPONSIBILITIES

A. Faculty

1. Know the laboratory facilities, *with special emphasis on safety equipment.* (This includes checking the experimental setups prior to lab.)
2. Instruct students in safety.
3. Model and enforce proper laboratory safety and equipment use.
4. Maintain an awareness of current safety requirements.
5. Design experiments that are safe and generate minimum amounts of waste.
6. Prepare and update laboratory manuals.
7. Assist the Laboratory Coordinator in maintaining the chemical stockroom and laboratory equipment.

B. Graduate Student

1. With the assistance of the faculty responsible for the laboratory, maintain the chemical storage area in a clean and organized manner consistent with established procedures.
2. Keep a file of current Material Safety Data Sheets (MSDS).
3. Keep an inventory of current chemicals. Order supplies and chemicals as needed.
4. Oversee and coordinate the preparation of chemicals and equipment for the teaching laboratories.
5. With the assistance of the faculty maintain the laboratory equipment.
6. Oversee student workers and their safety training. Enforce the use of personal protective equipment and laboratory safety
7. Maintain clean up kits for spills. (Mercury, Acid)
8. See that safety equipment is checked regularly and kept in good working order (hoods, showers, eyewash, fire extinguishers).
9. Coordinate chemical waste disposal.

IV. Emergency Procedures

- A. Any incident resulting in injury, property damage, or a fire must be reported promptly to the professor in charge, to Dept. of Public Safety (529-2222 or "00") and to the Paper and Chemical Engineering Office (529-0760).
- B. In Case of Injury
 1. In case of injury, promptly render first aid, *doing only the minimum necessary to prevent more serious injury to the patient.*
 2. If the injury appears serious, telephone (9911) and give the following details:
 - a. Identify yourself.
 - b. What has happened and where the patient is located.
 - i. building
 - ii. room number
 - c. If a hazardous chemical is involved, give the name of the substance in writing to the paramedic for delivery to the emergency room supervisor. (If you cannot stay on the line, call the switchboard and have them call **9911.**)
 3. For minor injuries, encourage the injured to see their doctor.

4. Report the incident promptly to Dept. of Public Safety (529-2222) and to the Paper and Chemical Engineering Dept. Office (529-0760), and also give a completed Incident Report Form to the Professor in charge of the Laboratory who will submit it to the chair where it will be kept on file.

C. In Case of Fire

1. If the fire is small and easily extinguished, use an appropriate response. Beaker size fires can often be smothered or allowed to burn out. When necessary use an extinguisher. Notify the Laboratory Coordinator so that the extinguisher can be recharged.
2. Upon learning of a fire (big or difficult to extinguish) immediately pull the fire alarm - if it is not already sounding. Fire alarms are located at every stair well and exit. Call the switchboard ("00") to have it pulled if you are unable to do it yourself.
 - a. Proceed with an orderly evacuation. If possible meet the Fire Department or safety officer outside to explain the nature and location of the fire.
 - b. When the fire alarm sounds, the building should be evacuated immediately. Faculty and laboratory assistants should close the doors to their labs and/or offices as they leave the building. As everyone leaves he/she should advise any persons seen lagging to also leave the building.
 - c. If the alarm does not work when it is pulled, the person knowing about the fire should notify the switchboard ("00") *and it is recommended that they proceed at once to notify other people in the building by knocking on all office, classroom, and lab doors as they exit the building.*
 - d. After the fire prepare a report on the Incident Report Form (Appendix C) and give it to the professor in charge of the laboratory.

D. In Case of Other Incidents (gas leaks, floods, etc.)

1. For emergencies and after hours notify the Dept. of Public Safety (529-2222).
2. In case of gas or water leaks. Faculty should be familiar with the location of the water and gas mains.
3. In case of electrical failure notify physical facilities work desk, (529-529-6111) The fume hoods in room must be reset.
4. Prepare a written report on the Incident Report Form (Appendix C) and give it to the Professor in charge of the laboratory and to the Chair of the Department.

V. CHEMICAL STORAGE.

- A. Volatile organic solvents will be stored in either a vented (Fire Marshall approved) cabinet for flammables or an explosion proof refrigerator. In the event that solvents must be stored outside they must be in solvent storage cans.
- B. There will be separate, labeled areas for acids, bases (in solution), oxidizers, solvents, and water sensitive reagents.
- C. Gas cylinders must be secured at all times. A cart is available for moving cylinders.
- D. Only minimum amounts of chemicals are to be ordered and stored.
 - a. The general rule is one and one-fourth year (summer to summer).
 - b. Ethers, other highly flammable or peroxide forming reagents, and reagents with short shelf lives should be ordered on an "as needed" basis.
 - c. All chemicals should be dated.

VI. ROUTINE AND HAZARDOUS WASTE DISPOSAL

- A. All waste material from laboratory experiments shall be placed in the appropriate waste container, which has been well labeled. These containers are to be removed from the lab to the waste storage area as soon as all sections of the laboratories are finished.
- B. Documentation of types and quantities of wastes is mandated by OSHA regulations. Each container should have a sheet recording the volume and type of each waste put in it. When the container is full, Environmental Health and Safety is to be notified and a pick up scheduled.
- C. Separate containers are to be provided for heavy metal wastes. Excess water is to be removed by evaporation prior to disposal. A careful record of which metals are in the container must be maintained.
- D. Mercury and mercury containing wastes are to be disposed of in a separate, closed, and labeled container for recycling.
- E. Oxidizing and Reducing Agents are to be placed in separate containers.
- F. Separate containers are to be provided for halogenated and nonhalogenated organic wastes.
- G. Maintain an ongoing dialogue with Environmental Health and Safety.

EMERGENCY PROCEDURES

Any incident resulting in injury, property damage, or a fire must be reported promptly to the instructor **in** charge, to the laboratory coordinator, to **Department of Public Safety (529-2222 or "00") Environmental Health & Safety (529-2829) and to the Department of Paper and Chemical Engineering Office (529-0760).**

In Case of Injury

1. In case of injury, promptly render first aid, *doing only the minimum necessary to prevent more serious injury to the patient.*
2. If the injury appears serious, telephone (9911) and give the following details:
 - a. Identify yourself.
 - b. What has happened and the building and room number where the patient is located.
 - c. If a hazardous chemical is involved, give the name of the substance in writing to the paramedic for delivery to the emergency room supervisor. (If you cannot stay on the line, call the switchboard **(00)** and have them call **9911.**)
3. For minor injuries, encourage the injured to see their doctor.
4. Report the incident promptly to Department of Public Safety (529-2222 or "00") Environmental Health & Safety (529-2829) and to the Department of Paper and Chemical Engineering Office (529-0760). and also give a completed Incident Report Form to the Chair of the Dept. who will keep it on file;

In Case of Fire

1. If the fire is small and easily extinguished, use an appropriate response. Beaker size fires can often be smothered or allowed to burn out. When necessary use an extinguisher. Notify the Laboratory Coordinator so that the extinguisher can be recharged.
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In Case of Other Incidents (gas leaks, floods, etc.)

1. For emergencies and after hours notify the department of Public Safety (529-2222).

INCIDENT REPORT

Time _____ Date _____

Class _____ Room _____

Name _____

Date and Time of Incident _____

Place of Incident _____

Class _____

Activity:

Your location in room _____

What were you doing at time of incident _____

What was the first indication you had of the incident _____

What did you observe _____

What did you do _____

Did the incident involve you _____

How _____

What instructions had you been given concerning this activity _____

Anything else you saw or heard that you think is important _____

Signed _____