Chemistry Safety Manual and Laboratory Student Agreement

Science and Health Department
University of Cincinnati-Clermont College

(SH Safety Committee)
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PREFACE

This manual serves as a resource document in compliance with University of Cincinnati (UC) Environmental Health and Safety, accreditation boards, and various state and federal organizations (Environmental, Occupational Health, and Safety).

Laboratories must develop written manuals which include specialized safety procedures, respective to discipline (Allied Health, Biology, and Chemistry), for all facets of laboratory activities.

The UC Clermont College-Science and Health Department will distribute this to the appropriate personnel and incorporate these policies into annual safety training.

The development and revision of detailed, written procedures is essential to establishing consistency, training personnel, and facilitating the recognition and compliance to workplace safety.

Additionally, these protocols are integral to a defendable and demonstrable safety program under the review of OSHA (Occupational Safety and Health Administration) or other agencies.

An effective safety program ensures that functioning policies are established, enforced, and effectively taught and documented.

The development and implementation of UC Clermont College-Science and Health Safety Plan fosters a safer working environment and promotes a reduction of laboratory accidents and injuries.

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Instructor Compliance and Enforcement:

1. It is the responsibility of the instructor to ensure the safety of each person working or volunteering in the laboratory.
2. Instructors must know the laboratory safety guidelines and procedures approved for the Science and Health Department.
3. Instructors must abide by all safety policies and procedures particular to their discipline and laboratory specific agreements.
4. At the start of each semester, instructors must provide and review the safety policies associated with their particular laboratory.
    a. Provide demonstration/ explanation about the location and use of safety equipment and proper use of laboratory items.
    b. Review emergency procedures related to a fire emergency, tornado, act of violence, needle stick/ sharps injury, etc.
5. Instructors will ensure compliance with the approved safety policies with all students, volunteers or other people who enter their laboratory.
6. Instructors will document and report any lab-related incident to the laboratory personnel, program coordinator or the department chair.
7. The S&H Department Chair will be responsible for addressing any situation involving non-complaint students, staff, or faculty.
8. The S&H Department Chair will be responsible for enforcing consequences in cases of non-compliance in relation to the approved safety policies.

Laboratory Safety Manual in Chemistry Area
Science and Health Department- Safety Committee
University of Cincinnati Clermont College

This manual provides general guidelines and basic rules within the chemistry area to:

a) encourage awareness of the risks in doing laboratory procedures
b) promote safe and best practices in the laboratory
c) protect the wellness and health of students, instructors, and laboratory personnel

The chemistry laboratory is a place for serious learning and working. Horseplay cannot be tolerated. Variations in procedures, including changes in the chemicals to be used or in the amounts that will be used, may be dangerous. Ask your instructor before you make any changes. Alterations may be made only with the knowledge and approval of your instructor

References to this manual include:

1. University of Cincinnati, Environmental Health and Safety https://ehs.uc.edu/
2. Safety in Academic Chemistry Laboratories Volume 1 Accident Prevention For College and University Students 7th Edition" A publication of the American Chemical Society Joint Board-Council Committee on Chemical Safety

Laboratory Visitors:

All laboratory visitors, no matter how brief their visit, must wear eye protection. Chemists and other scientists visiting a laboratory must observe safe behavior. Other laboratory visitors such as friends and relatives, particularly children, may not be aware of the hazards and may inadvertently commit unsafe acts. Obtain your laboratory instructor's approval before bringing visitors into the laboratory.

Personal Protection Requirements:

1. Always wear approved goggles for eye protection when you or others are working with chemicals or apparatus.
2. Wear your lab coat. Do not wear shorts, cutoffs, or short skirts.
3. Never wear lab coats out of the lab or into areas where food is consumed.
4. Confine and pull back long hair and loose clothing.
5. Do not handle contact lenses in the laboratory except to remove them when an emergency requires the use of the eyewash fountain or safety shower
6. Shoes must have closed toes and heals. Do not wear sandals, high-heeled shoes or open-toed shoes in the laboratory.

General Rules and Standard Laboratory Practices:

1. Conduct yourself in a responsible manner at all times in the laboratory. Never leave your lab activity unattended.
2. All doors must be closed when lab begins.
3. Know beforehand the hazardous characteristics of the chemicals with which you plan to work. You can read the Material Safety Data Sheets/or Safety Data Sheets on-line or in the chemistry lab. (University of Cincinnati EHS Advisory NO. 7.4)
4. Always wash your hands and arms with soap and water before leaving the laboratory, even if you wore gloves. Give lab coat to lab staff to wash if you spill chemicals on it.
5. Never work alone in the chemical laboratory.
6. Do not prepare or store (even temporarily) food or beverage in the chemical laboratory. Never consume food or beverage when you are in a chemical laboratory.

7. Do not chew gum or tobacco, and do not smoke or apply cosmetics in the laboratory. Be aware that cosmetics and tobacco products in opened packages can absorb chemical vapors.
8. Never pipet by mouth. Always use a pipet aid or suction bulb.
9. Never sniff a chemical to determine the identity. Label the beaker or container with a red wax pencil or use a Sharpie or place a label on the container to identify the contents.
10. Never perform unauthorized experiments.
11. When moving about the laboratory, anticipate sudden backing up or changes in direction by others. If you should stumble or fall while carrying glassware or chemicals try to project them away from yourself and others.
12. Never remove chemicals from the laboratory.
13. Keep chemicals and apparatus well away from the edges of your laboratory bench or other workspace.
14. Never engage in horseplay, pranks, or other acts of mischief in the laboratory.
15. Report violations of your laboratory's safety rules to your instructor – you could save their lives and your own.
16. All students must know the safety equipment in the lab and how it operates. All students must draw the lab room and note where the safety equipment is located on the first lab meeting which should include the safety training for that lab course. The location of exits, safety showers, eye wash, fire extinguishers and the nearest telephone (emergency) should be ascertained before beginning work.

First Aid:

1. Report all accidents, spills or broken glassware & equipment, no matter how minor, to your instructor immediately.
2. Know location of safety equipment & proper use.
3. Complete and submit appropriate incident report form for each incident that occurs during lab time. The form can be completed online on the EH&S website at https://ehs.uc.edu/Accident/newform.asp or the form can be downloaded for completion offline at https://ehs.uc.edu/forms.

Housekeeping:

Keeping things neat and clean leads to a safer laboratory.

1. Keep workspaces and storage areas clear of broken glass, leftover chemicals and scraps of paper.
2. Keep aisles clear of obstructions such as chairs, boxes, and waste receptacles.
3. Keep drawers and cabinets closed while working.
4. Clean all glassware, dry and put it back in the student drawer.
5. Clean counters and work area with a sponge and soap and water.
6. Instructors should check that all students have cleaned their lab benches and balances before the student leaves the lab.

Cleaning Glassware

1. Clean your soiled glassware at the sink. Wear appropriate gloves and use a brush. Use an acceptable cleaning detergent.
2. Avoid accumulating too much glassware in the clean-up area which can lead to breakage.
3. To clean up broken glass use a broom or brush and dustpan never pick up broken glass with hands. Always put broken glassware in the broken glassware container box in your lab.

Chemical Lab Waste
Instructors and students are responsible for ensuring that lab wastes are handled in a manner that minimizes personal hazard and recognizes the potential for environmental contamination.

1. The instructor of each lab will direct the student to use designated, labeled waste containers. Handle your chemical waste in the specific ways designated by the instructor.

Operation of Equipment

1. Turn off and unplug all equipment before leaving the lab. This includes all hotplates, Bunsen burners, heating mantles, centrifuges, and all other instruments in the lab.
2. Instructors should walk around the lab and check that all equipment is turned off.
3. Instructors also need to check to make sure the gas is shut off after every lab.

Instructors Take Attendance in Laboratory Class
The attendance and names will be used in case of a fire drill or other emergency.
All in attendance must meet outside away from the building. All students must be accounted for when an emergency happens.

Weather emergency and or Tornado Warning
Seek shelter in a lower floor room without windows and centrally located.

Evacuation and Emergency Situations*:

1. Familiarize yourself with the evacuation routes and the nearest exits.
2. When the building alarm sounds all must evacuate via the nearest designated emergency exit and proceed to the designated assembly areas.
3. Follow directions given to you by your instructor, supervisor, manager, and/ or emergency officer.
4. During emergency power shut down, the power sources should be shut off (heaters, agitation equipment, motor, vacuum pumps, UV lamps, and any electrical equipment). Do not work with chemicals or equipment under emergency lighting. (Staff will put away chemicals in storage in an emergency situation.)
5. In case of a fire, immediately vacate the building after turning off the gas and hotplates. Use the nearest exit route. Do not use elevators. Assist disabled persons in exiting the building.
6. The safety of all people is of foremost importance. But do not endanger yourself.

*See Clermont College Emergency Policies and Procedure

Documentation of Practices:

1. Requires students to sign Laboratory Student Agreements at the start of each semesters.
2. Prepare and keep laboratory attendance sheet.
3. Make Material Safety Data Sheets (MSDS) available at all times. After June 1, 2016, these will be Safety Data Sheets (SDS).

Chemistry Lab Student Agreement

All students registered for a chemistry lab section are responsible for reading, reviewing and signing the safety policies each semester. The rules are designed to give you and fellow students a safe and educational lab experience. Most accidents or injuries can be prevented by using common sense and following the policies listed below. Violation of the agreement could result in removal from the lab.

Laboratory Policies:

1. Never enter the laboratory without the presence of the laboratory instructor, laboratory staff, or other laboratory personnel who have attended safety training.
2. Proper apparel must be worn by all students in the laboratory. No open-toed shoes, shorts, short skirts or halters will be tolerated. If students come to lab wearing inappropriate apparel, they will be asked to cover exposed area or leave.
3. Lab coats and splash resistant, indirect vent goggles must be worn at ALL times in the laboratory. Lab coats will be provided. Goggles must be purchased and worn by the second lab meeting. Safety glasses are not acceptable and must meet ANSI standard Z871.1-198. Please inform your instructor and lab partner if you wear contact lenses.
4. Food, drinks, candy, and gum must not enter the laboratory. Food and drink is to be left outside the lab. This includes capped bottled water and soft drinks.
5. Students must be in control of all faculties to participate in the laboratory. If a student is deemed by the instructor, to be impaired in some way the student will not be allowed to complete the lab and will be asked to leave.
6. Please report any accidents/injuries/spills immediately to your instructor. The instructor will determine the best way to address the problem.
7. Students must familiarize themselves with the safety equipment in the laboratory. Fire extinguishers, eyewash/safety shower, spill kits, fire exits.
8. Broken glassware should be swept up with a broom and dust pan and placed in the “Glass Breakage Box”. Never place broken glass in the regular garbage can.
9. Chemicals must be mixed only following the experimental procedure and not arbitrarily.
10. Do not remove chemicals from the laboratory.
11. Never leave lab experiments unattended.
12. Cell phones should not be used in the laboratory. No talking or texting while conducting experiments
13. For every lab experiment, MSDS will be available for your review, but you should review the chemical MSDS sheets before coming to lab.
14. Avoid contamination of reagents. Always use the pipets provided with reagent bottles, not pipets from student drawers. Do not pour excess chemicals back into reagent bottles. Use care with stopper or tops of the reagent bottles.
15. When using strong acids, bases, or organic solvents gloves must be worn. If asked to note an odor, gently waft the vapors to observe the smell.
16. Deliberate misuse of instruments or disturbing behavior may result in disciplinary action.
17. Students may not enter the chemical stockroom unless accompanied by an instructor or lab staff.
18. Chemicals must be disposed of in the appropriate waste container and must never be put down the drain. The instructor will direct students concerning proper waste disposal.

19. All heating sources must be turned off and unplugged at the end of each lab period. i. e. hotplates, Bunsen burners, and sand baths.
20. Glassware and equipment should be cleaned and returned to its proper place. i. e. student lab drawer, gray bins or lab cart.
21. Student's hands, the lab bench and any equipment should be washed or wiped down at the end of each lab period. This includes hot plates, balances, and any other equipment used.
22. Follow any other safety rules given in the lab protocols or issued by your laboratory instructor.
23. Students must purchase approved goggles in the UC Clermont Bookstore before the second week/lab. Goggles will not be provided in the chemistry lab.

Student Agreement:

I have read and agree to follow the Chemistry Lab Student Agreement. I am aware that the instructor and /or laboratory staff has the right to report on or remove me from the laboratory if I fail to adhere to these policies. Furthermore, I understand that my instructor may deduct points for failure to obey these laboratory policies

Print Name: _____

Signature: _____ Date: _____

_____ I wear contact lenses.