Fayetteville State University

Chemical Hygiene Plan

Environmental Health & Safety

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5-8-2025

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Contents

This plan serves as a comprehensive guide for maintaining a safe laboratory environment and ensuring compliance with OSHA regulations and University policies.

1. REVISIONS TO THE CHEMICAL HYGIENE PLAN

Date: 4/01/2025
Description of Revisions: Complete Revision of Chemical Hygiene Plan to increase safety standards, training documentation, compliance, and ease of understanding by EHS.

Date: 5/08/2025

Description of Revisions: Formatting of document and addition of appendixes.

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2. EMERGENCY CONTACT INFORMATION

- Work-Related Injuries (8 AM - 5 PM): (672-1827)
- After-Hours Injuries: Report to Campus Police (672-1911)
- Fire or Smoke Emergencies: (672-1911)
- Chemical Spills: (672-1911/1295)

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3. PREFACE AND BACKGROUND

The Chemical Hygiene Plan (CHP) for Fayetteville State University establishes guidelines to protect students, faculty, and staff by ensuring the safe use, handling, and disposal of hazardous chemicals, hazardous waste, and laboratory equipment. This plan provides the necessary framework for compliance with the OSHA Laboratory Standard (29 CFR 1910.1450) and adheres to chemical hygiene standards set by the American National Standards Institute (ANSI). While the OSHA Lab Standard applies only to employees, all FSU lab users, regardless of employee status, must comply with the requirements of this Chemical Hygiene Plan.

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4. SUMMARY OF RESPONSIBILITIES

4.1. Chancellor, Vice Chancellor, Provost, Deans and Department Heads

a) Establish laboratory safety as an institutional priority.
b) Provide adequate financial and political support for Chemical Hygiene.
c) Include laboratory safety, chemical storage and disposal considerations in long range facilities planning and budgeting.
d) Appoint personnel to the Chemical Hygiene Committee.

e) Placing serious and/or repeat violations, as reported by the Committee, in personnel files and initiating disciplinary procedures as appropriate
f) Maintaining records of inspection reports provided by the Committee.

4.2. Chemical Hygiene Committee

The CHP Enforcement Committee is responsible for the oversight, maintenance, and implementation of the Chemical Hygiene Plan. This Committee shall consist of one (1) faculty member and one (1) staff member selected by the Chair/Supervisor of any Department/unit that handles any substance that has a Material Safety Data Sheet (MSDS), as well as a representative from the University's Environmental Health and Safety Office. These representatives will serve a two-year term, eligible for re-appointment for a maximum of two consecutive terms. The CHP Enforcement Committee Chair and the department representatives will be selected by the department Chairs/Supervisor in consultation with the Deans of the College of Health Science & Technology and the College of Humanities & Social Science. The committee will be responsible for:

a) Prepare, implement and maintain a written Chemical Hygiene Plan, setting forth general procedures, control measures and information needed to assist principal investigators, lab supervisors and students in protecting employees from hazards from chemical exposure.
b) Review and update the Chemical Hygiene plan every year, recommending any changes to the Department Chairs or Unit Heads.
c) Disseminating the Chemical Hygiene Plan online.
d) Presenting the Chemical Hygiene Plan annually to faculty and staff, in the form of a scheduled meeting or an online presentation.
e) Support Environmental Health and Safety implementation of laboratory safety policies, rules and regulations.
f) Promote the safe use of laboratory facilities in FSU.
g) Conducting regular inspections of classroom and research laboratories, reporting violations immediately to those who are responsible for the laboratory and suggesting corrective actions to be taken.
h) Ensuring that chemical and universal waste is disposed of properly and in a timely manner.
i) Submitting quarterly reports to the appropriate Department Chairs and Unit Heads that summarize the number of inspections carried out of the relevant Department or Unit and the number and seriousness of violations found.
j) Reporting serious and/or repeat violators to the Department Chairs and Unit Heads for appropriate disciplinary action.

4.3. Principal Investigators or Lab Supervisors (Faculty and Staff)

a) Maintain a copy of the Chemical Hygiene Plan (CHP) and enforce safe laboratory practices to comply with the content of the plan
b) Maintain appropriate Standard Operating Procedures (SOP) to supplement this plan and forward to Environmental Health and Safety.

c) Train and/or arrange training of laboratory workers, including students and visitors at the time of initial employment and each time new procedures, equipment or hazards are introduced in the labs.
d) Ensure availability and accessibility of SDS within all labs.
e) Ensure documentation of training, safety inspections, and hazardous materials storage and make it available to EHS during annual inspections.
f) Implement and enforce the use of safety procedures including appropriate lab attire, necessary PPE, engineering controls and work practices.
g) Correct identified deficiencies on lab inspection report and submit a written action plan including completion date to EHS by the indicated due date.
h) Maintain current chemical storage and forward to EHS upon request.
i) Ensure availability of written Emergency Action Plan (EAP) in the lab. The plan must be communicated to all personnel.
j) Maintain employee exposure to hazardous chemicals below permissible exposure limits set forth in OSHA 29 CFR 1910.subpart Z.
k) Maintain records of employee exposure determinations and lab related exposure incidents. Forward copies to EHS.
l) Provide necessary personal protective clothing and equipment (at no charge to employees)

Note: Respirator use must comply with the requirements of the Respiratory Protection Standard and users must be included in the FSU Respiratory Protection Program. Contact EHS before purchasing or issuing respiratory protection.

m) Assure that engineering controls are functioning properly and arrange for maintenance if required.
n) Collect, store and dispose of hazardous chemical waste properly through the FSU Laboratory Management Plan.
o) Assure that all chemical containers are properly labeled and stored by compatibility.
p) Assure that the areas where hazardous chemicals are used or stored are secured when not in use. Lab doors are closed and locked when not occupied.
q) Perform weekly laboratory inspections (**Appendix 3.** Laboratory inspection guidelines and form) and maintain records available for inspection.

4.4. Chemical Hygiene Officer

a) Update and oversee CHP implementation.
b) Provide technical support and safety guidance.
c) Provide training and update hazardous waste management SOP.
d) Arrange hazardous waste disposal and storage. (Refer to -Laboratory Management Plan)
e) Collect documentation of training, safety inspections, and disciplinary reports.

4.5. Environmental Health and Safety

a) Conduct exposure assessments, if needed and routine safety inspections.
b) Provide general safety training standards and resources to faculty & staff.
c) Ensure compliance with CHP, federal and state regulations.

4.6. Laboratory Users

a) Read and follow the guidelines in the Chemical Hygiene Plan and Standard Operating Procedures.
b) Participate in initial training and retain records for one semester.
c) Follow all safety procedures including appropriate lab attire, necessary personal protective equipment and engineering controls and work practices.
d) Do not remove or deface labels on incoming chemical containers.
e) Immediately label all secondary containers.
f) Report all exposure incidents or hazardous conditions to the Lab Supervisor.
g) Use provided materials to become familiar with the hazards associated with the chemicals and procedures within the lab (lab safety plans, SOPs, SDS, lab safety resource index, etc.).
h) Use prudent practices and prescribed hazard control measures.
i) Request information or training when unsure about how to handle a hazardous chemical or procedure.
j) Immediately inform the Lab Supervisor of any potential hazard, accident or near miss.

5. STANDARD OPERATING PROCEDURES (SOP)

SOPs can be stand-alone documents or supplemental information included as part of research notebooks, experiment documentation, or research proposals. The requirement for SOPs is to ensure a process is in place to document and address relevant health and safety issues as part of every experiment. A sample laboratory SOP is available in **Appendix 1**. Laboratory Specific Standard Operating Procedure.

At a minimum, SOPs should include details such as:

- The chemicals involved and their hazards.
- Special hazards and circumstances.
- Use of engineering controls (such as fume hoods).
- Required PPE.
- Spill response measures.
- Waste disposal procedures.
- Decontamination procedures.
- Description of how to perform the experiment or operation.

While the OSHA Laboratory Standard specifies the requirement for SOPs for work involving hazardous chemicals, laboratories should also develop SOPs for use with any piece of equipment or operation that may pose any physical hazards. Examples include:

- Safe use and considerations of lasers.
- Use of cryogenic liquids and fill procedures.
- Connecting regulators to gas cylinders and cylinder change outs.
- Use of equipment with high voltage.

The following standard operating procedures are general safety standards applicable to all FSU laboratories. Individual laboratories should supplement these with laboratory specific standard operating procedures/lab safety plans. EHS can assist supervisors in developing these plans. Violations in PPE usage must result in immediate corrective action or dismissal from laboratories. Dismissals should be documented by the lab supervisor or principal investigator and presented to the CHO.

5.1. Personal Protection

The employees' department, without cost to the employee, must supply Personal Protective Equipment PPE. Protective equipment remains the property of the University. The laboratory supervisor will identify additional protective devices required in individual laboratories.

5.1.1. Eye Protection

a) To uphold a strong safety culture, laboratory personnel are **required** to wear eye protection at all times when working in or entering laboratory spaces. This is essential to protect against a wide range of biological, chemical, and physical hazards that may be present, including but not limited to:
   - Acids, caustic substances, or other chemical liquids
   - Biological agents
   - Flying particles or broken glass
   - Hot liquids or molten metal
   - Potentially injurious light radiation

b) It is the responsibility of Principal Investigators and laboratory supervisors to ensure use of eye protection as a mandatory requirement for all laboratory personnel, including visitors, working in or entering laboratories under their control. Safety goggles/glasses or prescription glasses with side shields may be used as appropriate (Safety glasses do not provide adequate protection for processes that involve heavy chemical use such as stirring, pouring, or mixing. In these instances, splash goggles should be used).

c) The mandatory use of eye protection applies not only during active work with these hazards but also at all times within laboratory spaces to ensure preparedness for any unexpected risks. While sashes on fume hoods and biosafety cabinets provide a barrier, they are not a failsafe. Eye protection adds an essential layer of safety against unforeseen risks.

d) Contact lens use – Use of contact lenses are not allowed in labs where fumes or vapors may permeate the lens and cause damage to the eyes of the wearer.

e) Face shields and/or standing guards must be available where face or neck protection is required. Safety glasses or splash goggles must be worn with face shields/standing guards.

5.1.2. Protective Clothing

a) Laboratory users are required to wear closed-toed shoes made of a nonwoven material with nonslip soles. The user's ankles cannot be visible and must be covered with socks at all times to protect the ankles.

b) Laboratory users must wear clothing that covers the entire length of the arms and legs at all times. Appropriate clothing must be donned prior to entering the laboratory.
c) Laboratory users must wear a closed lab coat, with all buttons or snaps secured, at all times when working in the lab.
d) Lab coats must be removed before leaving the laboratory.
e) Launder lab coat separately from personal laundry.
f) Nonflammable, nonporous lab coat must be used where corrosive liquid chemicals are used.

5.1.3. Respiratory Protection

a) Respirators should not be used where mechanical means can be used to control exposure.
b) No respirator may be stored or used in a laboratory until the intended laboratory user has completed the requirements of the FSU Respiratory Protection Program including medical clearance, fit testing and training.

5.1.4. Gloves

a) Use gloves that are compatible with the chemical(s) in use.
b) Inspect gloves to assure the absence of wear, cracks or discoloration before use.
c) Rings and long fingernails which may perforate or otherwise compromise the integrity of gloves.
d) Remove gloves before leaving the laboratory or handling uncontaminated items (e.g. a doorknob or phone).
e) Clean or discard gloves immediately after use (consistent with use and contamination).
f) Wash hands immediately after removing gloves.
g) Do not use disposable latex gloves for chemical protection unless you have permission from the Principal Investigator or Lab Supervisor. Be aware of signs and symptoms associated with a latex allergy.

5.1.5. Personal Hygiene

a) Do not prepare, store or consume food or beverages in the laboratory. Food and appliances must be maintained in a location physically separated by a wall from the chemical laboratory.
b) Do not smoke, use or store tobacco products in the laboratory.
c) Do not apply cosmetics in the laboratory.
d) Do not use deionized water or laboratory ice for personal consumption.
e) Wash hands and arms thoroughly before leaving the laboratory, even if gloves have been worn.
f) Never pipette by mouth.
g) Do not taste chemicals.
h) When smelling of chemicals is required, use the wafting technique to do so.
i) Long hair and loose clothing must be constrained.

5.2. Training

5.2.1. Chemical Hygiene training

a) EHS staff coordinates Chemical Hygiene Lab safety training to all laboratory staff and faculty via CORNERSTONE for annual refresher course.
b) All laboratory staff and faculty should review the Chemical Hygiene Plan annually.

5.2.2. Laboratory specific training

Each lab supervisor / principal investigators will provide lab specific training. Training will include:

a) Locations of emergency equipment such as eyewash stations, fire extinguishers, fire pull stations, safety showers, etc.
b) How to use personal protective equipment in the laboratory and the specific PPE needed per hazard.
c) Emergency Evacuation Plan, including exits, evacuation routes and designated meeting locations.
d) Chemical labeling, storage and hazardous waste disposal procedures (Refer to - Laboratory Management Plan).
e) Location of designated areas for use of carcinogens, reproductive toxins or acutely toxic substances.
f) Location and access instructions for a copy of the laboratory chemical inventory, Chemical Hygiene Plan, SDSs, and laboratory specific standard operating procedures/lab safety plans or methodologies.
g) A record of lab specific training, including the trainee's signature and list of items covered shall be maintained by the Principal Investigator or Lab Supervisor (Current FSU Faculty or Staff). A copy of all training records shall be available for review by EHS during annual laboratory inspections.

5.3. Laboratory Practice

5.3.1. Transporting Chemicals

a) Assure all chemical containers have a secure cap that will not allow spillage prior to transport. (Para film or corks are not considered a secure cap.)
b) Transport chemicals within a tightly sealed chemically resistant container inside of a chemically resistant secondary container or pan that can contain any spill or leak.
c) Use elevators for chemical transport when available.
d) No chemical containers may be transported outside a university building without prior notification of EHS.
e) Ground all metal containers when dispensing flammable liquids. Only small quantities of flammable liquids should be transferred to glass containers.
f) Use bottle carriers for transporting chemicals that are in regular glass containers.
g) When transporting compressed gas cylinders, always use a proper gas cylinder hand truck with the cylinder strapped to the cart and keep the cap in place. NEVER roll or drag a compressed gas cylinder.

5.3.2. Shipping Hazardous Materials

a) Must comply with DOT and IATA (International Air Transport Association) regulations.

b) Personnel who directly affect hazardous material transportation must receive general awareness, function-specific, safety and security awareness training.
c) Covered activities include: loading/unloading hazardous materials, preparing hazardous materials for shipment (Packaging/labeling), shipping specimens/samples in dry ice, liquid nitrogen or other hazardous preservative.
d) Training may be provided by the EHS office upon request.
e) Researchers coming to or leaving the university must not bring or take any chemicals, biologicals or radioactive materials.
f) Security plans and additional in-depth security training are required when shipping certain types or quantities of hazardous materials.
g) For additional information or questions regarding hazardous material transportation and security, please contact the EHS office.

5.3.3. Chemical Labeling

a) Manufacturer's labels must be maintained on all incoming chemical containers.
b) Torn or defaced labels must be replaced immediately. GHS compliant label must be used that contains:
   - the identity of the hazardous chemical
   - appropriate hazard warnings
   - expiration date (if applicable)
   - name and address of the manufacturer or importer
   - date of receipt
c) If not in constant possession of the generator, secondary containers must be labeled with:
   - the name of the product (in English, no abbreviations, no chemical structures, no formulas)
   - hazard warning(s) with pictograms
   - date of preparation
   - initials of preparer
   - expiration date if applicable

5.3.4. Chemical Purchase

a) If it is necessary to purchase new chemicals, laboratory personnel should order the smallest size necessary to carry out the experiment. Avoid ordering extra quantities because the chemical "might be needed in the future".
b) Choose the least hazardous chemical that will perform for use in laboratory procedures.
c) Purchase the smallest quantity of hazardous chemicals necessary to complete laboratory procedures.
d) Confirm available inventory of chemicals prior to ordering.
e) Chemical purchases with personal funds for use in university laboratories are prohibited.
f) All chemicals purchased should be added to the inventory and notify the CHO and EHS.

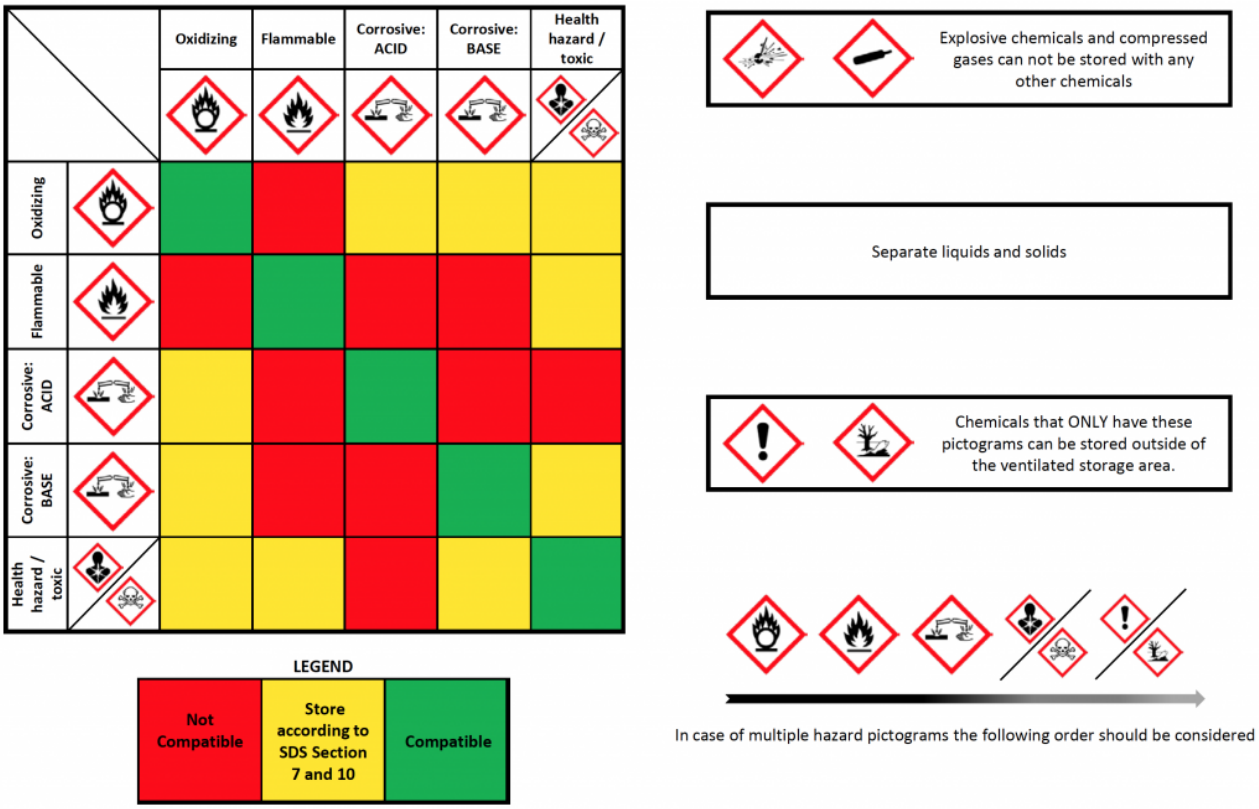
5.3.5. Ordering new Equipment

Whenever large pieces of equipment are planned to be purchased and installed in laboratories, especially equipment that is required to be directly installed to building utility services such as electric, water, or gas, laboratory personnel / principal investigators must first consult with Facilities, EHS, to ensure the building has the necessary resources to

support the new piece of equipment. Lab personnel should not assume they can purchase equipment first and then expect the building to be able to handle the service requirements later. By preplanning and communicating well in advance with appropriate campus groups (such as Facilities and EHS), compliance to electrical regulations and adherence to building electrical load.

5.3.6. Chemical Storage

a) Minimize the quantity of chemicals stored in the laboratory. Inventories must not exceed maximum allowable quantities as indicated in the North Carolina Department of Public Safety. Be particularly aware of materials with a high hazard or shelf life, including peroxide forming chemicals.
b) The storage of chemicals on bench tops should be kept to a minimum to help prevent clutter and spills, and to allow for adequate working space.
c) Chemical storage in fume hoods should be kept to a minimum - limited to the experiment being conducted. Excess storage of chemical containers in hoods can interfere with airflow, reduce working space, and increase the risk of a spill, fire, or explosion.
d) Chemical inventory must correspond with the written standard operating procedures.
e) Chemicals past their shelf life should be disposed according to the Laboratory Management Plan guidelines.
f) Store chemicals in compatibility groups.



Note that two chemicals can have the same pictogram and still be incompatible!

Example: Acetic acid and triethylamine are both flammable, but cannot be stored together because they are an acid and a base.

g) A maximum total of 10 gallons of flammable liquids may be stored in a laboratory outside of a flammable storage cabinet.
h) Refrigerators/freezers used for the storage of flammable materials must be rated as such.
i) Store all chemicals in a manner that minimizes potential spillage onto personnel, equipment and other chemical containers. This may include secondary containment for hazardous chemicals.
j) Store liquids, corrosives, and flammables below eye level (4 to 4.5 feet).
k) Provide a barrier between compatibility groups in storage. A compatible shallow tray capable of holding the content of the largest 2 containers in the hazard class will fill this need.
l) Inspect container and label integrity as part of the weekly lab inspection checklist. Clean any spill immediately.
m) Always keep spill kits and other spill control equipment on hand in areas where chemicals are used. Ensure all personnel working in the lab have been properly trained on the location and use of the spill kit.

5.3.7. Safety Data Sheets

a) Safety Data Sheets (SDSs) are an important part of any laboratory safety program in communicating information to chemical users. SDSs provide useful information such as:
   - The identity of the chemical substance.
   - Physical and chemical characteristics.
   - Physical and health hazards.
   - Primary routes of entry.
   - OSHA Permissible Exposure Limits (PELs).
   - Carcinogenic and reproductive health status.
   - Precautions for safe handling and use (including PPE).
   - Spill response procedures.
   - Emergency and first aid questions.
   - Date the SDS was prepared.
   - Any chemical shipment received should be accompanied by an SDS (unless one has been shipped with a previous order). If you do not receive an SDS with your shipment, check the chemical manufacturers website first (or call the manufacturer directly), or contact EHS to request assistance in obtaining the SDS.
b) If you have questions on how to read SDSs, or questions about the terminology or data used in SDSs, you can contact EHS
c) EHS requires that **paper copies of SDSs** be kept in the laboratory. SDS binders or storage locations must be **properly labeled** and their location **clearly communicated** to all employees.
d) Principal Investigators will be responsible for ensuring that newly synthesized chemicals are used exclusively within their laboratories and are properly labeled. If the hazards of a chemical synthesized in the laboratory are unknown, then the chemical must be assumed to be hazardous, and the label should indicate the potential hazards of that substance have not been tested and are unknown.

5.3.8. Housekeeping

a) Keeping all areas of the lab free of clutter, trash, extraneous equipment, and unused chemical containers. Areas within the lab that should be addressed include benches, hoods, refrigerators, cabinets, chemical storage cabinets, sinks, trash cans, etc.
b) Keep chemical use areas clean and free from contamination. (To protect staff safety, Housekeeping Services will not clean bench tops or other lab areas where chemical contamination is possible.)
c) Close and cap all chemical containers when not in use.
d) Clean drips and/or spillage off of container exteriors immediately.
e) Keep areas around emergency equipment and devices clean and free of clutter. This includes items such as eyewash/emergency showers, electric power panels, fire extinguishers, and spill cleanup supplies.
f) When storing items overhead, keep heavier and bulkier items closer to the floor. In sprinklered rooms, All storage, including both combustible and non-combustible materials, must be kept at least 18" below the level of the sprinkler head deflectors to ensure that fire sprinkler coverage is not impeded.
g) Always use a stepladder when reaching for overhead items, do not stand on chairs or countertops.
h) Exits must be clear of obstacles and tripping hazards such as bottles, boxes, equipment, electric cords, etc. Combustible materials may not be stored in exits (including corridors and stairways), exit enclosures, boiler rooms, mechanical rooms, or electrical equipment rooms.

5.3.9. Compressed Gas Cylinders

a) Must be stored according to compatibility.
b) Must be fully labeled including cylinder content and status (full, empty, or in-service).
c) Must be installed and leak tested by lab personnel who are trained to connect the cylinder properly.
d) Must be secured in an upright position.
e) Must be capped when not in use.
f) Must be used with a compatible regulator and other auxiliary equipment. Assure all threads match those on the cylinder valve outlet.

5.4. Personal Safety

5.4.1. Laboratory Access

a) Only authorized lab personnel may perform approved protocols in university laboratories. Authorized lab personnel is defined as any current FSU faculty or staff member or currently enrolled student that has successfully completed the required training, including but not limited to EHS Chemical Hygiene/Laboratory Safety Training.
b) Laboratory personnel must accompany visitors to the laboratory at all times and provide the necessary training. All visitors must be approved by the hosting Department Chair.
c) No unauthorized (nor unsupervised) minors may be present in any laboratory where hazardous chemicals are stored or used.

d) Laboratory doors must be locked when the laboratory is unoccupied by laboratory personnel.
e) Lab personnel that know or suspect they might be pregnant should be encouraged to consult their personal physician concerning the potential risks and additional precautions necessary during pregnancy. A copy of the lab chemical inventory, individual laboratory safety plans and current procedures should be provided.
f) Administrative, clerical and other non-lab personnel are prohibited from maintaining workstations in a laboratory.

5.4.1.1. Visitors and Minors in Labs

Due to the potential hazards and liability issues, other persons, in particular individuals under the age of 18, are not permitted in hazardous work areas, with the exception of University-sanctioned activity, e.g., tours, open houses, or other University-related business as authorized by the Principal Investigator or laboratory supervisor and approved by the Division of Legal, Audit, Risk, and Compliance (LARC). In these instances, all individuals under the age of 18 must be under careful and continuous supervision.

5.4.1.2. Minors in research laboratories

Students under the age of 18 and not enrolled as Fayetteville State University student who wish to do research in a lab must be approved by the Division of Legal, Audit, Risk, and Compliance (LARC).

5.4.2. Horseplay

Horseplay will not be tolerated in the laboratory. Dangerous behavior within labs will result in immediate dismissal.

5.4.3. Unattended Overnight Experiments

After hours work should be limited. For unattended operations involving highly hazardous materials, a light should be left on and an appropriate warning/explanation sign should be placed on the laboratory door, or in a conspicuous place that could be easily seen without putting someone else in danger in the event of an emergency.

The warning sign should list the following information:

- The nature of the experiment in progress.
- The chemicals in use.
- Hazards present (electrical, heat, etc.)
- The name of the person conducting the experiment and a contact number. A secondary name and contact number is also recommended.

When setting up an experiment that will be left unattended, try to take into account potential incidents that could occur if something went wrong. For example:

- Use secondary containment such as trays to contain any spills that may occur.

- Use safety shields and keep the chemical hood sash down low to contain chemicals and glass in case an explosion occurs.
- Remove any chemicals or equipment that are not necessary for the experiment or items that could potentially react with the chemicals or other materials being used in the experiment.
- Whenever possible, use automatic shutoff devices to prevent accidents such as loss of cooling water shutoff, over-temperature shut off, etc.
- Use emergency power outlets for those pieces of equipment that could be negatively affected in the event electric service or other city utilities are interrupted.

5.4.4. Eyewash Stations

a) Must meet the requirements of ANSI Z358.1-2009. (Portable eyewash bottles or drench hoses will not meet this requirement.)
b) Must be used to supply 15 minutes' worth of clear running water to fully clean the eye
c) Use must be followed by appropriate medical treatment.
d) Eyewash will be operated weekly to assure proper function and minimize bacterial contamination. Weekly functional tests must be documented and the record given to EHS annually.
e) Any eyewash or safety shower that fails the weekly test or needs repair must be written up and reported through a Work Order to Facilities for repair. EHS must also be notified.
f) Access to the equipment must always be unimpeded.

5.4.5. Safety Showers

a) Must meet the requirements of ANSI Z358.1-2009.
b) Use must be followed by appropriate medical treatment.
c) Showers will be operated weekly to assure proper function and minimize bacterial contamination. Weekly functional tests must be documented.
d) Access to the equipment must always be unimpeded.

5.4.6. Fire Extinguishers

a) Fire extinguishers will be installed by Facilities Operations when required. The type of extinguisher provided shall be determined by the type and size of fire most likely to occur in the laboratory.
b) All uses of fire extinguishers shall be reported to EHS to assure extinguishers are fully charged and operational.
c) The EHS office will ensure inspection of all fire extinguishers is performed monthly.
d) It is FSU Policy for occupants to evacuate and activate the fire alarm upon the discovery of a fire. Only individuals who have completed fire extinguisher training through the EHS office and are comfortable with use, can safely discharge the extinguisher. Training may be requested through the EHS office.

5.5. Laboratory Controls

5.5.1. Ventilation

a) General room ventilation patterns must not be altered. Do not block room air supply grills, return duct grills or remove drop ceiling tiles. Laboratory doors should remain closed.
b) Canopy style local exhaust ventilation may only be used when no other form of ventilation is practical or when no toxic substances will be released (e.g. heat control for large apparatus).
c) Local exhaust should be used to capture point source discharges of toxic chemicals from apparatus as appropriate.
d) Toxic chemicals should not be used outside of a chemical fume hood or other containment system in rooms where air is re-circulated, (e.g. clean rooms or cold rooms).

5.5.2. Chemical Fume Hoods

a) Use the chemical fume hood for all operations that might result in an odoriferous, volatile, toxic or otherwise harmful release.
b) Assure that the hood is drawing properly prior to use.
c) Work at least 6 inches into the fume hood.
d) Elevate sash 2 inches off of the hood deck with blocks at each end to allow airflow under the apparatus except where the elevation would make the equipment unstable. Ensure that elevated equipment is safely secured and will not tip over.
e) The sash should never be higher than 12 inches except when accessing equipment.
f) Do not use the fume hood for storage.
g) All fume hood installations and removals must be in accordance with State and Federal regulations and be reviewed by EHS prior to installation or removal.
h) The newer exhaust hoods are equipped to allow confirmation that they are working, and will sound an alarm when it is below the accepted airflow rate. Also, a simple test that shows if the hood is working is to place a strip of thin plastic or other light flexible material cut into thin lengths of about 4 to 6". They should move to an inward deflection position
i) EHS and Facilities share the responsibility for the annual testing and inspection of fume hoods on campus. After each inspection, an inspection sticker is affixed to the fume hood. If a hood is found to be unacceptable, a warning sign indicating the hood did not pass inspection and should not be used is fixed to the sash.

5.5.3. Specialized Hoods

5.5.3.1. Biosafety Cabinets

Are inspected and certified annually or when the unit must be moved.

5.5.3.2. Gloveboxes

a. Seals and gloves must be inspected prior to each use of a glovebox.
b. Gloveboxes will be evaluated annually.

5.5.3.3. Other Laboratory Control Equipment

a. Laboratory staff shall inspect specialized laboratory control equipment prior to each use to ensure function.

5.6. Sharps and Glass

Laboratory Managers and Principal Investigators are responsible for disposal of sharps and glass within their designated labs.

5.6.1. Sharps

a) Used or contaminated needles, syringes, small bore pipettes, slides, lancets, scalpels and razor blades are to be placed in a red sharps container.
b) No part of a sharp may extend beyond the cap of the sharps container at any time.
c) Seal sharps container when they reach ¾ full.

5.6.2. Broken Glass

a) Place uncontaminated large bore pipettes and broken laboratory glass into a rigid cardboard box labeled "Broken Glass".
b) Seal the box when ¾ full for pick up and dispose of it.

5.7. Chemical Waste Management

Chemicals must be identified as waste for disposal or transferred via redistribution (Refer to – Laboratory Management Plan)

5.8. Hazardous waste management

Any chemical waste determined to be hazardous is considered controlled waste and is subject to compliance with 40CFR Part 262 Subpart K. (Refer to – Laboratory Management Plan)

5.9. Spills

5.9.1. Chemicals Spills

a) Laboratory users may clean up a small spill when they have the necessary materials in the laboratory and have the appropriate training to clean the spill up safely. (Refer to – Chemical Spill Prevention and Response Plan)

5.10. Radiation Hazards

Refer to Radiation Safety Plan

5.11. Laser Hazards

Refer to Laser Safety Plan

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6. Record Keeping Requirements

- Maintain inspection records for three years.
- Documented weekly safety checks of labs must be maintained. (Appendix C)
- Document training and exposure monitoring.
- Retain all incident reports.

- Scan all documents to avoid misplacement and ensure they are submitted to chemical hygiene officer and EHS for record keeping and compliance within 30 days of each semester.

7. Accident Reporting and Documentation

All laboratory personnel are required to immediately report any accidents, potential exposures, or near-miss incidents to their laboratory supervisor without delay. Additionally, all accidents must be promptly reported to Human Resources (HR) and Environmental Health & Safety (EHS). This reporting protocol applies to all safety incidents, no matter how minor they may seem. Detailed documentation should be completed using the official Accident Report Form **(Appendix 2)**, which enables thorough investigation and implementation of corrective actions to prevent recurrence. Timely reporting is critical as it ensures appropriate medical attention when needed, facilitates hazard mitigation, and maintains compliance with university safety policies. Remember that reporting near misses - situations that could have resulted in harm - is equally important as they provide valuable opportunities to improve safety before an actual injury occurs

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7.1 Additional References for Chemical Safety and PEL

Prudent Practices (National Academy Press)

OSHA Lab Standard 1910.1450

OSHA Table Z1 - Air Contaminants PEL

OSHA Table Z2 - Air Contaminants STEL and Ceiling

OSHA Table Z3 - Mineral Dust PELs

CDC-NIOSH Workplace Safety and Health Topics (Chemicals)

8. Signatures: **Date:**

9. Appendixes

9.1. Appendix 1. Laboratory Specific Standard Operating Procedures.

Laboratory Specific Standard Operating Procedure
Fayetteville State University

1200 Murchison Rd
Fayetteville, North Carolina

Building: _____ **Room:** _____
Department: _____
Lab Manager / Principal Investigator: _____

Section 1: (Check one)

☐ Process
☐ Hazardous Material Storage and Handling
☐ Hazardous Material Class

Section 2: Describe Process, Hazardous Material Storage and Handling, Hazardous Material Class

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Section 3: Potential Hazards

Section 4: Personal Protective Equipment (PPE)

Section 5: Engineering Controls

Section 6: Special Handling and Storage Procedures

Section 7: Spill and Accident Procedures

Section 8: Decontamination Procedures

Section 9: Waste Disposal Procedures

Section 10: MSDS Location

Section 11: Protocol

Prepared by: _____ Date: _____
Reviewed by: _____ Date: _____
Approved by: _____ Date: _____

9.2. Appendix 2. Accident Report Form

Laboratory Accidental Injury Report
Fayetteville State University

1200 Murchison Rd
Fayetteville, North Carolina

Time and Place of Accident:

NAME of Injured Person:

Was injured person a Student?
☐ Yes ☐ No
Course #: _____ **Lab Section:** _____ **Room:** _____

NAME of Supervisor:

DESCRIBE Accident (include the injured person's activity, equipment/chemicals used, part of the body injured, and cause):

Nature and Extent of Injury:

Type of First Aid Used:

Student Health Center? ☐ Yes ☐ No

Hospital Treatment? ☐ Yes ☐ No
Name of Hospital: _____

Principal Cause(s) of Accident and Injury:

Secondary Causes:

_____

_____

What should be done and by whom to prevent a recurrence of this or similar accidents?

_____

_____

_____

Signature of Injured Person: _____ **Date:** _____

Report Filed by: _____ **Date:** _____

9.3. Appendix 3. Laboratory Inspection Guidelines and Form

The following guide has been developed to assist you in your scheduled safety surveillance of laboratories and departments under your responsibility as lab supervisor / principal investigator. This guide is by no means all encompassing, however, information contained after each item should assist you in determining whether your area may be in full, partial or non-compliance.

Keep in mind that laboratory inspections must be in compliance with all Federal, State and University rules, recommendations and regulations concerning OSHA, EPA, NIH, CDC, and DOT.

1. **Entrances, Exits, Hallways and Stairways** - All entrances, exits, hallways and stairways must be clear and unobstructed. Maintaining 36 inches of clearance for emergency egress.
2. **Showers/Eye Wash Operative** - Any area which deals with corrosive, flammable or otherwise hazardous material is required to have immediate access to eyewash and drench shower facilities. Eye wash bottles are not adequate equipment. All showers and eye wash equipment must be in full operational order and unobstructed. **Weekly inspections are required.**
3. **Personal Protective Equipment** - Personal Protective Equipment such as goggles, masks, gloves and cover gowns must be readily available and not worn outside the immediate work areas. Googles, lab coats and appropriate shoes shall be worn at all times to avoid any contact with harmful materials.
4. **Fire Extinguisher/Inspection and Location** - All fire extinguishers must be inspected annually. Extinguishers must be properly mounted, unobstructed and be properly labeled for the intended use. Training classes are offered through FSU EHS.
5. **Pressurized Cylinders** - All cylinders must be stored in proper locations. All cylinders must be secured in an upright position and properly restrained to prevent falling. Containers must be labeled for contents and usage.
6. **Room Use Identification** - All access doors must be marked when rooms or areas are being used for chemical, biological or radioactive purposes. All doors must remain closed and the vision panel must remain unobstructed. Unattended labs shall be locked at all times.
7. **UL Electrical Equipment and Cords** - Only Underwriters Laboratories approved equipment and cords are authorized for use. Only UL listed multiple outlet strips equipped with 15 AMP circuit breakers are approved.
8. **Laboratory Chemical Hood Operation** - Face Velocities should be between 80 and 150 FPM at the working sash height with an optimum level of 100 FPM. The sash should never be higher than 12 inches except when accessing equipment. Any chemical fume hoods with warning or FPMs not within the approved range must be immediately reported and cleared until standard range is reestablished.
9. **Biological Safety Cabinets/Autoclaves** – Inspection and certification is required annually or any time the device is moved or has had maintenance performed.

10. **Hazardous Chemicals** - All chemicals must be appropriately labeled and shall not be placed near or over floor drains. Flammable liquids must be stored in appropriate containers. There should be no more than 1 L containers of solvents or Class IA or IB flammables out in the lab; larger quantities must be stored in flammable closets or cabinets.

11. **Hazardous Waste Disposal** - Hazardous waste training is required for all employees who handle hazardous material. For information on training contact Chemical Hygiene Officer - Ivy Rittenhouse irittenhouse@uncfsu.edu +1 (910) 672-1054

12. **Equipment and Utility Labeling** - Refrigerators, ice machines and microwaves must be labeled for intended use. Food, personal medication and hazardous materials shall not be housed in the same refrigerator.

13. **Location of Cut-off Valves/Circuit Breakers** - All cut off valves and breakers must be properly labeled/unobstructed.

14. **General Safety (Dress, Eating, Smoking, etc.)** - Eating, drinking, smoking and applying cosmetics is not permitted in laboratories. Lab personnel shall not wear loose clothing (e.g. saris, dangling neckties, and overly large or ragged lab coats), skimpy clothing (e.g. shorts and/or halter-tops), torn clothing, or unrestrained long hair. Perforated shoes, sandals, or cloth sneakers are not to be worn in labs.

15. **Use of Flame and Heat** - No heat generating devices should be left unattended.

16. **Ventilation** - Airflow in most labs should be "negative" with respect to the corridor. Laboratory doors shall be kept closed when laboratory procedures are in progress. Volatile hazardous materials shall not be used on the open bench top.

17. **Housekeeping/Drains Flushed** - All unnecessary material, boxes, and containers must be disposed of in the appropriate manner. All drains, including floor drains and cup sinks should be flushed with water on a weekly basis to eliminate sewer odors. Proper housekeeping must be maintained to provide adequate clearance of sprinkler systems and emergency equipment.

18. **Sharps** (Glass, Scalpel, Blades, Syringes, Etc.) - All sharps, needles and glass must be disposed of in an approved, labeled container. Glass containers and other potentially sharp objects shall not be disposed of in common office refuse. Containers must not be overfilled and must be labeled and sealed for proper handling and disposal.

19. **Emergency lighting** - Where necessary, emergency lighting units shall be properly mounted and unobstructed. If emergency lighting exists, it should be checked periodically to ensure it is functional.

20. **Emergency Plans/Posted Numbers** - All emergency and contingency plans and evacuation routes shall be clearly posted in conspicuous places. A list of emergency numbers and contacts must be kept updated and posted alongside the emergency plans.

21. **Safety Manuals** - Manuals must be current and readily available for all employees.

22. **Accidents Reported/Investigated** - All accidents must be reported to the immediate supervisor for the completion of the appropriate forms. File copies of reported incidents and accidents must be on hand, as well as the action taken to alleviate safety hazard in the future.

23. **Storage**: All storage, including both combustible and non-combustible materials, must be kept at least 18" below the level of the sprinkler head deflectors to ensure that fire sprinkler coverage is not impeded.

9.3.1. Weekly Laboratory Self Inspection Form.

Weekly Laboratory Self Inspection Form
Fayetteville State University

1200 Murchison Rd
Fayetteville, North Carolina

Department: _____ **Building:** _____
Room Number: _____ **PI:** _____
Inspector: _____ **Month:** _____

Rating:

✓ **Yes = Compliant** ✗ **No = Non-Compliant** **N/A:** Non-Applicable

Category	Week 1	Week 2	Week 3	Week 4	Notes
1. General Housekeeping					
Floors clean and unobstructed					
Work areas free of clutter					
Proper waste disposal (regular, chemical, biohazard)					
2. Chemical Safety					
Chemicals properly labeled and stored					
No expired or degraded chemicals					
Secondary containment used where needed					
3. Emergency Equipment					
Eyewash/shower accessible and tested					
Fire extinguisher charged and accessible					
First-aid kit stocked and accessible					

Category	Week 1	Week 2	Week 3	Week 4	Notes
4. PPE & Lab Practices					
PPE (gloves, goggles, lab coats) available and used					
No food/drink in lab areas					
Proper use of fume hoods (if applicable)					
5. Electrical Safety					
No damaged cords or outlets					
Power strips not overloaded					
6. Equipment Maintenance					
Equipment in good working order					
Calibration/validation up to date (if applicable)					
7. Storage					
Storage is at least 18" below the level of sprinkler head					

Additional Comments:

_____

_____

Inspector's Signature: _____ **Date:** ___ / ___ / _____

Corrective Actions Required? ☐ **Yes** ☐ **No**

Follow-up Assignee: _____ **Due Date:** ____ / ____ / _____