Chemical Hygiene Plan

Revised September 2015

Office of Environmental Health and Safety
210 East 4th St., Greenville, North Carolina 27858-4353
## EMERGENCY TELEPHONE NUMBERS

<table>
<thead>
<tr>
<th>Service</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECU Main Campus Emergency</td>
<td>911</td>
</tr>
<tr>
<td>(Fire, Campus Police, Rescue, EMS)</td>
<td></td>
</tr>
<tr>
<td>ECU Health Sciences Campus Emergency</td>
<td>911</td>
</tr>
<tr>
<td>(Fire, City Police, Rescue, EMS)</td>
<td></td>
</tr>
<tr>
<td>East Campus Police</td>
<td>328-6787</td>
</tr>
<tr>
<td>Health Sciences Campus Police</td>
<td>744-2246</td>
</tr>
<tr>
<td>ECU Police Hearing Impaired Line (TDD)</td>
<td>328-4827</td>
</tr>
<tr>
<td>Office of Environmental Health and Safety (EH&amp;S)</td>
<td>328-6166</td>
</tr>
<tr>
<td>ECU Chemical Hygiene Officer</td>
<td>328-6166</td>
</tr>
<tr>
<td>Hazardous Waste Pick-up</td>
<td>328-6166</td>
</tr>
<tr>
<td>Radiation Safety Office, Prospective Health</td>
<td>744-2070</td>
</tr>
<tr>
<td>Biological Safety Office, Prospective Health</td>
<td>744-2070</td>
</tr>
<tr>
<td>Office of Prospective Health</td>
<td>744-2070</td>
</tr>
<tr>
<td>Student Health Services</td>
<td>328-6841</td>
</tr>
<tr>
<td>Main Campus Facilities Services</td>
<td>328-6776</td>
</tr>
<tr>
<td>Health Sciences Campus Facilities Services</td>
<td>744-2251</td>
</tr>
<tr>
<td>Campus Emergency Information Hotline</td>
<td>328-0062</td>
</tr>
<tr>
<td>(Adverse weather delays or cancellations)</td>
<td></td>
</tr>
<tr>
<td>ECU Physicians Emergency Information Hotline</td>
<td>744-5080</td>
</tr>
<tr>
<td>(Adverse weather delays or cancellations)</td>
<td>1-800-745-5181</td>
</tr>
<tr>
<td>North Carolina Poison Center (information after 911 call)</td>
<td>1-800-222-1222</td>
</tr>
<tr>
<td>Duke Medical Center Poison Control Center (after 911 call)</td>
<td>1-800-672-1697</td>
</tr>
<tr>
<td>Laboratory Supervisor (Name)</td>
<td>Home:</td>
</tr>
<tr>
<td>(Office Location)</td>
<td>Office:</td>
</tr>
</tbody>
</table>

## ACCESS EH&S INFORMATION RESOURCES

<table>
<thead>
<tr>
<th>Resource</th>
<th>Address/Contact Information</th>
</tr>
</thead>
</table>
| Office of Environmental Health and Safety (EH&S) | 210 East 4th Street  
Greenville, NC, 27858-4353  |
| Environmental Health & Safety Web Page | [http://www.ecu.edu/oehs](http://www.ecu.edu/oehs) |
| Email                              | safety@ecu.edu                           |
| EH&S Phone Line                    | 328-6166                                 |
| EH&S Fax Line                      | 737-1458                                 |
| ECU Library Catalogues             | [www.ecu.edu/lib/](http://www.ecu.edu/lib/) |
| Review/Revision Date               | September 2015                           |

(Post this document by the telephone in your laboratory)
# East Carolina University Chemical Hygiene Plan

## Table of Contents

1.0 Introduction  
1.1 Scope  
1.2 Application  

2.0 Responsibilities  
2.1 ECU Chancellor, Vice Chancellors, Provost, Deans and Department Heads  
2.2 Environmental Safety Committee  
2.3 Environmental Health and Safety  
2.4 Principal Investigators, Lab Supervisors  
2.5 Laboratory Users  
2.6 Open/Shared Laboratory Users  

3.0 Training  
3.1 Chemical Hygiene Training  
3.1.1 Availability  
3.1.2 Content  
3.1.3 Information  
3.2 Laboratory Specific Training  

4.0 Standard Operating Procedures  
4.1 Personal Protection  
4.1.1 Eye Protection  
4.1.2 Protective Clothing  
4.1.3 Respiratory Protection  
4.1.4 Gloves  
4.1.5 Personal Hygiene  
4.2 Laboratory Practice  
4.2.1 Transporting Chemicals  
4.2.2 Shipping Hazardous Materials  
4.2.3 Chemical Labeling  
4.2.4 Chemical Purchase  
4.2.5 Chemical Storage  
4.2.6 Housekeeping  
4.2.7 Compressed Gas Cylinders  
4.3 Personal Safety  
4.3.1 Laboratory Acces  
4.3.2 University Property  
4.3.3 Horseplay  
4.3.4 After-Hours Work  
4.3.5 Working Alone  
4.3.6 Unattended Operations  
4.3.7 Hazardous Materials Security Awareness  
4.3.8 Eyewash Stations  

---
4.3.9 Safety Showers.................................................................10
4.3.10 Fire Extinguishers.......................................................10

4.4 Laboratory Controls...........................................................10
  4.4.1 Ventilation......................................................................10
  4.4.2 Chemical Fume Hoods...................................................11
  4.4.3 Specialized Hoods..........................................................11
  4.4.4 Other Laboratory Control Equipment.............................11

5.0 Chemical Waste Management
  5.1 Training.............................................................................11
  5.2 Chemical Waste for Disposal.............................................12
    5.2.1 Containers .................................................................12
    5.2.2 Collection ..................................................................12
    5.2.3 Container Labels..........................................................12
    5.2.4 Pick-up Process ............................................................12
    5.2.5 Drain Disposal .............................................................13
  5.3 RECY-CHEM.....................................................................14
  5.4 Radioactive Wastes............................................................14
  5.5 Biological Wastes ..............................................................14
  5.6 Unidentified Material........................................................14
  5.7 Glass and Sharps...............................................................14
    5.7.1 Sharps........................................................................14
    5.7.2 Broken Glass.................................................................14
  5.8 Spills................................................................................14
    5.8.1 Chemicals.................................................................14
    5.8.2 Radioactive Material ..................................................14
    5.8.3 Biological Material .....................................................14

6.0 Medical Consultation
  6.1 Reporting.........................................................................15
  6.2 Availability.......................................................................15
  6.3 Options............................................................................15
  6.4 Information.......................................................................15
  6.5 Follow-up.........................................................................16
1.0 INTRODUCTION
1.1 Scope:
East Carolina University is dedicated to protecting the health and safety of its laboratory users through compliance with applicable Local, State and Federal regulations. The Occupational Safety and Health Administration (OSHA) promulgated 29 CFR 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories, on January 31, 1990 to provide guidelines for the safe use of chemicals in laboratories.
1.2 Application:
This standard applies in locations where "laboratory use" of hazardous chemicals occurs. Laboratory use of hazardous chemicals means handling or use of chemicals in which all of the following conditions are met:

- handling or use of chemicals occurs on a "laboratory scale" (work involves containers which can easily and safely be manipulated by one person);
- multiple chemicals or chemical procedures are used;
- procedures are not part of a production process or process simulation; and
- protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposures to hazardous chemicals.

Note: This standard does not apply where the use of hazardous chemicals provides no potential for employee exposure, such as in procedures using chemically impregnated test media and commercially prepared test kits.

The Chemical Hygiene Plan (CHP) is intended to provide the necessary framework for compliance with the OSHA Lab Standard. The OSHA Lab Standard applies only to employees but all ECU lab users must comply with the requirements of the Chemical Hygiene Plan, regardless of employee status.

University policy requires supervisors to share its content and promote compliance with the standard operating procedures.

2.0 RESPONSIBILITIES
2.1 ECU Chancellor, Vice Chancellors, Provost, Deans and Department Heads
2.1.1 Establish laboratory safety as an institutional priority;
2.1.2 Provide adequate financial and political support for chemical hygiene at ECU; and
2.1.3 Include laboratory safety, chemical storage and disposal considerations in long-range facilities planning.
2.2 Environmental Safety Committee
2.2.1 Review the Chemical Hygiene Plan every 3 years;
2.2.2 Support Environmental Health and Safety implementation of laboratory safety PRRs; and
2.2.3 Promote the safe use of laboratory facilities at ECU.
2.3 Environmental Health and Safety (EH&S)
2.3.1 Appoint a Chemical Hygiene Officer (CHO) who is qualified by training to provide technical guidance (The Health Sciences Coordinator with EH&S will be the University CHO);
2.3.2 Prepare, implement, and maintain a written Chemical Hygiene Plan, setting forth general procedures, control measures, and information intended to assist Principle Investigators and Lab Supervisors in protecting employees from harm arising from chemical exposure;
   2.3.2.1 The Chemical Hygiene Plan will be reviewed annually and a full program review will occur every three years.
2.3.3 Provide employees with initial chemical hygiene training as scheduled and upon request;
2.3.4 Assist lab users in locating and obtaining SDSs upon request;
2.3.5 Maintain a master chemical inventory;
2.3.6 Maintain an emergency contact list;
2.3.7 Provide monitoring services for anticipated or suspected employee exposures and where required by chemical specific OSHA standards to determine proper protective measures upon request. (See the EH&S lab safety web site for a listing of chemical specific monitoring requirements.);
2.3.8 Evaluate performance of chemical fume hoods at least annually;
2.3.9 Coordinate required medical surveillance, treatment and exposure related recordkeeping through the Workers’ Compensation Manager;
2.3.10 Perform annual and follow-up laboratory inspections and submit detailed report of identified deficiencies to principle investigators;
2.3.11 Perform new lab start-up inspections prior to principle investigator beginning work in their laboratory;
2.3.12 Perform lab close-out inspections prior to principle investigators and/or lab staff leaving the University;
2.3.13 Review all grant proposals involving the use of hazardous chemicals and perform an additional lab inspection prior to approval.

2.4 Principal Investigators, Lab Supervisors
2.4.1 Maintain a current copy of the ECU Chemical Hygiene Plan and ensure that laboratory personnel comply with the content of the Plan;
2.4.2 Create appropriate standard operating procedures/laboratory safety plans to supplement this Plan and forward to EH&S;
2.4.3 Train and/or arrange for training of laboratory workers, including students and visitors, at the time of initial employment and each time new procedures or hazards are introduced in accordance with section 3.2;
2.4.4 Maintain records of training (see Lab Specific Training Documentation Form) and make available to EH&S during annual inspections;
2.4.5 Implement and enforce the use of safety procedures including appropriate lab attire, necessary personal protective equipment, engineering controls or work practices;
2.4.6 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.
2.4.7 Assure that all chemical containers properly labeled and stored by compatibility;
2.4.8 Correct identified deficiencies on lab inspection report and submit a written action plan including completion date to EH&S by the indicated due date;
2.4.9 Maintain current chemical inventory on required format and forward to EH&S at least annually;
2.4.10 Maintain current door posting with emergency contact information and forward to EH&S at least annually;
2.4.11 Ensure availability of written emergency evacuation plan in the lab. Evacuation plan must be communicated to all lab personnel.
2.4.12 Assure that interim (weekly, semester, and annual) inspections are conducted using the lab self-inspection worksheets available on the EH&S lab safety web site.
2.4.13 Maintain employee exposure to hazardous chemicals below permissible exposure limits set forth in OSHA 29 CFR 1910.subpart Z. (See EH&S lab safety web page);
2.4.14 Arrange for EH&S to conduct appropriate air monitoring when required by a chemical specific standard or when exposure is anticipated or suspected and notify affected lab users of results in a timely manner;
2.4.15 Arrange for appropriate routine medical surveillance as required by OSHA regulation for specific hazardous chemicals through EH&S;
2.4.16 Initiate EH&S medical surveillance review and follow-up of all exposure incidents;
2.4.17 Maintain records of employee exposure determinations and lab related exposure incidents. Forward copies to EH&S;
2.4.18 Provide necessary personal protective clothing and equipment (at no charge to employees) Note: Respirator use must comply with requirements of the Respiratory Protection Standard. Users must be included in the ECU Respiratory Protection Program. Contact EH&S before purchasing or issuing respiratory protection;
2.4.19 Assure that engineering controls are functioning properly and arrange for maintenance if required;
2.4.20 If carcinogens, reproductive toxins, or acutely toxic chemicals are used in the lab, identify "designated use areas" in the lab safety plan;
2.4.21 Ensure the availability of Safety Data Sheets and relevant reference materials for each chemical used or stored in the lab;
2.4.22 Collect, store and dispose of chemical waste properly through the ECU hazardous waste disposal system;
2.4.23 Contact EH&S for lab start-up instruction and inspection prior to beginning work in the lab;
2.4.24 Complete the lab close-out form (see EH&S lab close-out model) and contact EH&S to schedule a final inspection within 10 business days of leaving the University;
2.4.25 Submit all grant proposals involving the use of hazardous chemicals to EH&S for approval (See EH&S Grant Review web page); and
2.4.26 Include chemical hygiene and laboratory safety compliance in employee annual work plans for performance review.

2.5 Laboratory Users
2.5.1 Read and follow the guidelines in the Chemical Hygiene Plan and standard operating procedures/lab safety plans;
2.5.2 Participate in initial and refresher training;
2.5.3 Follow all safety procedures including appropriate lab attire, necessary personal protective equipment and engineering controls and work practices.
2.5.4 Do not remove or deface labels on incoming chemical containers;
2.5.5 Immediately label all secondary containers with the chemical constituents, hazard warning, responsible party or manufacturer, and date of preparation;
2.5.6 Report all exposure incidents or hazardous conditions to your Lab Supervisor;
2.5.7 Use provided materials to become familiar with the hazards associated with the chemicals and procedures used in your lab (lab safety plans, SDS, lab safety resource index, etc.);
2.5.8 Use prudent practices and prescribed hazard control measures;
2.5.9 Request information or training when unsure about how to handle a hazardous chemical or procedure;
2.5.10 Inform supervisor of any potential hazard, accident or near miss; and
2.5.11 Perform only authorized work, preparations and experiments in the laboratory.

2.6 Open/Shared Laboratory Users
2.6.1 Identify the individual to serve as lab representative/person of contact.
2.6.2 Assign and identify responsibility for benches and storage areas.
2.6.3 All laboratory users must receive lab specific training that includes all hazards and control measures associate with lab equipment/protocols performed in the laboratory, including all lab safety plans, chemical storage and hazardous waste areas.
2.6.4 Identify and train all laboratory users regarding procedures for shared chemicals and equipment.
2.6.5 Maintain chemical storage and labeling requirements.
2.6.6 Maintain good housekeeping and personal diligence to prevent exposures and contamination.
2.6.7 Immediately report any hazardous condition to the immediate supervisor and/or lab representative.
2.6.8 Maintain responsibilities and requirements as listed in the CHP based on user status.

3.0 TRAINING

3.1 Chemical Hygiene Training

3.1.1 Availability
3.1.1.1 EH&S staff provides Chemical Hygiene Training to all laboratory employees in general sessions.
3.1.1.2 Chemical Hygiene Training is available on the EH&S lab safety web site for individuals unable to attend the class. A passing score of 100% is required on the online training quiz.
3.1.1.3 Additional training sessions can be scheduled for groups upon request. To request training, send an email to safety@ecu.edu.
3.1.1.4 All laboratory employees will be required to attend refresher training every three years after review/revision of the Chemical Hygiene Plan.

3.1.2 Content
3.1.2.1 Methods and observations that may be used to detect the presence or release of a hazardous chemical.
3.1.2.2 Permissible exposure limits and exposure guidelines.
3.1.2.3 Physical and health hazards of chemicals.
3.1.2.4 Measures employees can take to protect themselves from these hazards.
3.1.2.5 The content of this Plan, its location and availability.
3.1.2.6 Signs and symptoms associated with exposure to hazardous chemicals.

3.1.3 Information
3.1.3.1 The entire text of the Occupational Exposure to Hazardous Chemicals in Laboratories standard (29 CFR 1910.1450) is available on the EH&S lab safety web page.
3.1.3.2 Safety Data Sheets (SDS) detailing chemical or mixture specific physical and hazard assessment information are available on the SDS web page.
3.1.3.3 Reference materials including access to SDS, chemical profiles and hazard information is located on the Lab Safety web page.
3.1.3.4 How to Read a SDS – is a short, section-by-section explanation of the SDS components available on the Lab Safety Resource Guide.

3.2 Laboratory Specific Training. Each laboratory supervisor will provide lab specific training. Training will include:
3.2.1 Location of emergency equipment such as eyewash stations, fire extinguishers, fire pull stations, safety showers, etc.;
3.2.2 How to locate and use personal protective equipment in the laboratory;
3.2.3 Emergency Evacuation Plan, including exits, evacuation routes and designated meeting locations;
3.2.4 Chemical labeling, storage, and EH&S waste disposal procedures;
3.2.5 Location of designated areas for use of carcinogens, reproductive toxins or acutely toxic substances;
3.2.6 Location and access instructions for a copy of the laboratory chemical inventory, Chemical Hygiene Plan, material safety data sheets and laboratory specific standard operating procedures/lab safety plans or methodologies; and

3.2.7 Any other pertinent information deemed important by the laboratory supervisor;

3.2.8 A record of lab specific training, including the trainee’s signature and list of items covered shall be maintained in each laboratory (see Lab Specific Training Documentation Form). A copy of all training records shall be available for review by EH&S during annual laboratory inspections.

4.0 STANDARD OPERATING PROCEDURES

The following standard operating procedures are general safety standards applicable to all ECU laboratories. Individual laboratories should supplement these with laboratory specific standard operating procedures/lab safety plans. EH&S can assist supervisors in developing these plans.

4.1 Personal Protection

The employee’s department, without cost to the employee, must supply personal protective equipment. Protective equipment remains the property of the University. The laboratory supervisor will identify additional protective devices required in individual laboratories.

4.1.1 Eye Protection

4.1.1.1 All people in laboratories, including visitors, must wear appropriate ANSI approved eye protection when the potential exists for eye injury (chemical use, high/low temperature, high/low pressure, compressed gas use, vibrating or rotating apparatus use, continuous operations). Safety goggles or glasses with side shields may be used as appropriate. Standard prescription eyeglasses are not sufficient.

4.1.1.2 Contact lenses may be worn in the laboratory with appropriate safety glasses;

4.1.1.3 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.

4.1.2 Protective Clothing

4.1.2.1 Laboratory users must wear closed toed shoes made of a non-woven material with non-slip soles;

4.1.2.2 Laboratory users must wear clothing that covers exposed arms and legs;

4.1.2.3 Laboratory users must wear a closed lab coat;

4.1.2.4 Lab coats must be removed before leaving the laboratory;

4.1.2.5 Launder clothing worn in the laboratory separately from personal laundry;

4.1.2.6 Nonflammable, nonporous aprons must be available where corrosive liquid chemicals are used.

4.1.3 Respiratory Protection

4.1.3.1 Respirators should not be used where mechanical means can be used to control exposure;

4.1.3.2 No respirator may be stored or used in a laboratory until the intended laboratory user has completed the requirements of the ECU Respiratory Protection Program including medical clearance, fit testing and training.

4.1.4 Gloves

4.1.4.1 Use a glove that is compatible with the chemical(s) in use. (See ECU Lab Safety Resource Index for more information).

4.1.4.2 Inspect gloves to assure the absence of wear, cracks or discoloration before use.

4.1.4.3 Remove gloves before leaving the laboratory or handling uncontaminated items (e.g. a doorknob or telephone receiver).
4.1.4.4 Clean or discard gloves immediately after use (consistent with use and contamination).
4.1.4.5 Wash hands immediately after removing gloves.
4.1.4.6 Do not use disposable latex gloves for chemical protection. Be aware of signs and symptoms associated with the latex allergy. (See the EH&S Lab Safety web page for more information.)

4.1.5 Personal Hygiene

4.1.5.1 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.
4.1.5.2 Do not smoke, use or store tobacco products in the laboratory.
4.1.5.3 Do not apply cosmetics in the laboratory.
4.1.5.4 Do not use deionized water or laboratory ice for personal consumption.
4.1.5.5 Wash hands and arms thoroughly before leaving the laboratory, even if gloves have been worn.
4.1.5.6 Never pipette by mouth.
4.1.5.7 Do not smell or taste chemicals.
4.1.5.8 Long hair and loose clothing must be constrained.

4.2 Laboratory Practice

4.2.1 Transporting Chemicals

4.2.1.1 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.)
4.2.1.2 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.
4.2.1.3 Use freight elevators for chemical transport where available.
4.2.1.4 No chemical containers may be transported outside a University building without prior approval from EH&S.
4.2.1.5 Ground all metal containers when dispensing flammable liquids. Only small quantities of flammable liquids should be transferred to glass containers.

4.2.2 Shipping Hazardous Materials

4.2.2.1 Must comply with DOT and IATA (International Air Transport Association) regulations
4.2.2.2 Personnel who directly affect hazardous material transportation must receive general awareness, function-specific, safety and security awareness training.
4.2.2.3 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.
4.2.2.4 Training is provided by Prospective Health and must be taken every 2 years.
4.2.2.5 Researchers coming to or leaving the university must not bring or take any chemicals, biologicals or radioactive materials.
4.2.2.6 Security plans and additional in-depth security training are required when shipping certain types or quantities of hazardous materials.
4.2.2.7 For additional information or questions regarding hazardous material transportation and security, please contact:
   - Biological/Infectious Materials: Prospective Health/Biological Safety
   - Radioactive Materials: Prospective Health/Radiation Safety
   - Chemicals: Environmental Health and Safety
4.2.3 Chemical Labeling
4.2.3.1 Labels must be maintained on all incoming chemical containers.
4.2.3.2 Torn or defaced labels must be replaced immediately. Any style of label may be used that maintains:
   ➢ the identity of the hazardous chemical,
   ➢ appropriate hazard warnings,
   ➢ expiration date (if applicable) and
   ➢ name and address of the manufacturer or importer.
4.2.3.3 Secondary containers must be immediately labeled with
   ➢ the name of the product (in English, no abbreviations, no chemical structures, no formulas),
   ➢ hazard warning,
   ➢ date of preparation,
   ➢ name of the responsible party, and
   ➢ expiration date if applicable.

4.2.4 Chemical Purchase
4.2.4.1 Choose the least hazardous chemical that will perform for use in laboratory procedures.
4.2.4.2 Purchase the smallest quantity of hazardous chemicals necessary to complete laboratory procedures for up to one year.
4.2.4.3 Chemical purchases with personal funds for use in University laboratories are prohibited.
4.2.4.4 Distance Education lab kits and protocols must have prior approval from EH&S.

4.2.5 Chemical Storage
4.2.5.1 Minimize the quantity of chemicals stored in the laboratory. Inventories must not exceed maximum allowable quantities as indicated in the North Carolina Building Codes. Be particularly aware of materials with a high hazard or shelf life, including peroxide formers.
4.2.5.2 Chemical inventory must correspond with written lab manual and standard operating procedures/lab safety plans.
4.2.5.3 Chemicals that have not been used in the past three years and are not anticipated to be used in identified laboratory procedures should be placed in the RECY-CHEM program for redistribution or the EH&S hazardous waste disposal system.
4.2.5.4 Store chemicals in compatibility groups (see EH&S Lab Safety web page for additional information).
4.2.5.5 A maximum total of 10 gallons of flammable liquids may be stored in a laboratory outside of a flammable storage cabinet.
4.2.5.6 Refrigerators/freezers used for the storage of flammable materials must be rated as such.
4.2.5.7 Store all chemicals in a manner that minimizes potential spillage onto personnel, equipment and other chemical containers.
4.2.5.8 Chemicals should be stored in closed cabinets. If open shelving must be used, it must be secured to the wall. Each shelf must have a minimum ¾ inch lip.
4.2.5.9 Store liquids, corrosives, and flammables below eye level (4 to 4.5 feet).
4.2.5.10 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.
4.2.5.11 Inspect container and label integrity as part of the weekly lab inspection checklist. Clean any spill immediately.
4.2.6 Housekeeping
4.2.6.1 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.)
4.2.6.2 Close and cap all chemical containers not in use.
4.2.6.3 Clean drips and/or spillage off of container exteriors immediately.
4.2.6.4 Maintain minimal equipment on working surfaces.
4.2.6.5 Maintain clear exits and aisles.
4.2.6.6 Maintain clear access to fire extinguishers, emergency eyewash and safety shower equipment.
4.2.6.7 Label all doors that are blocked on the interior side of the door and not intended for use.
4.2.6.8 Keep storage items out of hallways and stairwells. Such items may be removed to campus surplus without notice.
4.2.6.9 Store all supplies and non-floor mounted equipment 12 inches or more off the floor.
4.2.6.10 Follow the Contaminated Surplus Property Procedures when transferring or surplusing lab equipment.

4.2.7 Compressed Gas Cylinders
4.2.7.1 Must be stored according to compatibility.
4.2.7.2 Must be fully labeled including cylinder content and status (full, empty, or in-service).
4.2.7.3 Must be installed and leak tested by lab personnel who are trained to connect the cylinder properly.
4.2.7.4 Must be secured in an upright position and double-chained at all times.
4.2.7.5 Must be capped when not in use.
4.2.7.6 Must be used with a compatible regulator and other auxiliary equipment. Assure all threads match those on the cylinder valve outlet.

4.3 Personal Safety
4.3.1 Laboratory Access
4.3.1.1 Only authorized lab personnel may perform approved protocols in University laboratories. Authorized lab personnel is defined as any current East Carolina University faculty or staff member or currently enrolled student that has successfully completed the required training, including but not limited to EH&S Chemical Hygiene/Laboratory Safety Training.
4.3.1.2 Laboratory staff must accompany visitors to the laboratory at all times and provide the necessary training. All visitors to the Health Sciences Campus must comply with the Brody School of Medicine Student/Visitor Policy. All visitors to the East Campus must be approved by the hosting Department Chair. Lab Principle Investigator/Lab Supervisor maintains approval documentation.
4.3.1.3 No children under 12 years of age may be present in any laboratory where hazardous chemicals are stored or used.
4.3.1.4 Laboratory doors must be locked when the laboratory is unoccupied by laboratory staff.
4.3.1.5 Lab staff 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. See the EH&S lab safety web site for additional resources.
4.3.1.6 Administrative, clerical and other non-lab personnel are prohibited from maintaining workstations in a laboratory.
4.3.2 University property, including laboratory equipment and chemical containers, may not be removed from University facilities. Contact EH&S to coordinate chemical moves between University properties.

4.3.3 Horseplay will not be tolerated in the laboratory.

4.3.4 Limit laboratory work after normal business hours. If circumstances require after-hours work, it must be authorized by the Laboratory PI/Supervisor and arrangements must be made to assure the workers’ safety.

4.3.5 No laboratory user should work alone. If circumstances require working alone, it must be authorized by the Laboratory PI/Supervisor and arrangements must be made to assure the workers’ safety.

4.3.6 Operations should not be allowed to run unattended without **ALL** of the following:

4.3.6.1 Laboratory Supervisor’s review and permission;

4.3.6.2 A fail-safe provision (E.g., 1) A temperature sensor attached to your reflux apparatus can stop the reaction when cooling is lost. 2) Clamp flasks to prevent vibration movement; 3) Secure/clamp condenser hose connections to prevent a break in connection; 4) Place catch pans or trays under apparatus to collect potential spills);

4.3.6.3 Emergency instructions including the nature of the operation, identity of hazardous materials involved, location of emergency cutoff switches and contact information for the individual most familiar with the operation posted outside of the door; and

4.3.6.4 Laboratory lights left on.

4.3.7 Hazardous Materials Security Awareness

4.3.7.1 All hazardous materials are potential targets for sabotage and theft but of particular concern are flammables, explosives, corrosives, reactive substances, toxic substances, radioactive materials and infectious agents.

4.3.7.2 Measures must be taken to secure hazardous materials and recognize/respond to security threats.

4.3.7.2.1 Identify and assess vulnerabilities.

4.3.7.2.2 Share information only on a need-to-know basis.

4.3.7.2.3 Someone you hire may pose a security risk. Conduct thorough background checks.

4.3.7.2.4 Maintain updated and accurate inventories.

4.3.7.2.5 Conduct regular inspections and report missing material.

4.3.7.2.6 Secure hazardous materials in appropriate cabinets.

4.3.7.2.7 Lock doors and limit access to authorized personnel.

4.3.7.2.8 Be aware of surroundings and report suspicious activity.

4.3.7.2.9 Do not stereotype an individual as a terrorist or potential perpetrator. Individuals may not fit a preconceived idea of a criminal.

4.3.7.2.10 Most terrorist threats are external but could also include internal threats such as disgruntled employees.

4.3.7.2.11 Take all threats seriously and report them to your supervisor and ECU Police.

4.3.8 Eyewash Stations

4.3.8.1 Must meet the requirements of ANSI Z358.1-2009. (Portable eyewash bottles or drench hoses will not meet this requirement.)

4.3.8.2 Must be used to supply 15 minutes worth of clear running water to fully clean the eye.

4.3.8.3 Use should be followed by appropriate medical treatment.

4.3.8.4 Must be operated weekly to assure proper function and minimize bacterial contamination. Weekly functional tests must be documented.

4.3.8.5 Shall be tested at least annually by Facilities Services.

4.3.8.6 Access to the equipment must be unimpeded.
4.3.9  Safety Showers
4.3.9.1  Must meet the requirements of ANSI Z358.1-2009.
4.3.9.2  Use should be followed by appropriate medical treatment.
4.3.9.3  Shall be tested at least annually by Facilities Service.
4.3.9.4  Access to the equipment must be unimpeded.

4.3.10  Fire Extinguishers
4.3.10.1  Fire extinguishers will be installed by Facilities Services when required. The type of extinguisher provided shall be determined by the type and size of fire most likely to occur in the laboratory.
4.3.10.2  All uses of fire extinguishers shall be reported to Facilities Services through the online work order system to assure extinguishers are fully charged and operational.
4.3.10.3  Facilities Services will inspect all fire extinguishers monthly.
4.3.10.4  It is University Policy to evacuate and activate the fire alarm upon the discovery of a fire. Only individuals who have completed fire extinguisher training and are comfortable that they can safely discharge the unit should try to use extinguishers. Training may be requested through EH&S.

4.4  Laboratory Controls
4.4.1  Ventilation
4.4.1.1  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 (laboratory doors should be provided with self-closing hardware to assure proper operation of ventilation system).
4.4.1.2  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).
4.4.1.3  Local exhaust should be used to capture point source discharges of toxic chemicals from apparatus as appropriate.
4.4.1.4  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).

4.4.2  Chemical Fume Hoods
4.4.2.1  Use the chemical fume hood for all operations that might result in an odoriferous, volatile, toxic or harmful release.
4.4.2.2  Assure that the hood is drawing properly prior to use. A mounted monometer, digital display or sash mounted telltale may be used.
4.4.2.3  Work at least 6 inches into the fume hood.
4.4.2.4  Elevate large apparatus 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.
4.4.2.5  Maintain the sash no higher than the posted height while in use and close sash when hood is not in use.
4.4.2.6  Do not use the fume hood for storage. (Vented storage cabinets should be used for vented storage.)
4.4.2.7  A continuous monitoring device such as a thin strip of tissue paper or manometer should be installed on chemical fume hoods to allow the user to assure proper direction of flow before beginning a task.
4.4.2.8  No ductless or recirculating fume hoods may be in ECU facilities.
4.4.2.9  All fume hoods will be evaluated at least annually by EH&S.
4.4.2.10 All fume hood installations and removals must be in accordance with State and Federal regulations and be reviewed by EH&S.

4.4.3 Specialized Hoods

4.4.3.1 The Radiation Safety Office inspects radiation use hoods at least annually.
4.4.3.1.1 For more information contact the Radiation Safety Office at 744-2070.
4.4.3.2 Biosafety Cabinets
4.4.3.2.1 Biosafety Cabinets are inspected and certified by the Biological Safety Office annually and when the unit must be moved.
4.4.3.2.2 Contact the Biological Safety Office for more information at 744-2070.

4.4.3.3 Gloveboxes
4.4.3.3.1 Seals and gloves must be inspected prior to each use of a glovebox.
4.4.3.3.2 Gloveboxes will be evaluated by EH&S annually. Gloveboxes using radioactive or biological material will be referred to the Radiation and Biological Safety Offices.

Note: There are no water-wash hoods available on campus. Heating of highly concentrated acids are prohibited. Contact EH&S for assistance.

4.4.4 Other Laboratory Control Equipment

4.4.4.1 Laboratory staff shall inspect specialized laboratory control equipment prior to each use to insure function.
4.4.4.2 Local exhaust should be used to capture point source discharges of toxic chemicals from apparatus and shall be evaluated annually by EH&S.

5.0 Chemical Waste Management

Chemicals must be identified as waste for disposal or surplus for redistribution.

5.1 Training:

5.1.1 Hazardous Waste/Satellite Accumulation training is required for all employees who produce, handle, or accumulate hazardous waste.

5.1.2 The training is to be completed upon initial employment/assignment to a laboratory, if an employee is in need of retraining due to hazardous waste deficiencies in their respective laboratory, as well as every 3 years after review/revision of the Chemical Hygiene Plan.

5.1.3 Individuals must pass the required online quiz to receive credit for the training.

5.1.4 The training is included in the Chemical Hygiene/Laboratory Safety Training, and it is located on the EH&S Chemical and Hazardous Waste web page.

5.2 Chemical Waste for Disposal:

5.2.1 Containers

5.2.1.1 Collect materials in original type containers that are compatible with the collected material. Improper containers (i.e. milk jugs, vegetable oil bottles) will not be collected for disposal and it will be the laboratory’s responsibility to transfer the waste to an appropriate container.

5.2.1.2 Collect material in containers free of incompatible residue.

5.2.1.3 Containers must have a closed, tight fitting cap that will not leak if the container is tipped on its side. (Corks, stoppers, etc., are not acceptable.)

5.2.1.4 Containers must be free from exterior damage or contamination.

5.2.2 Collection

5.2.2.1 Collect waste by compatibility groups.

5.2.2.2 Collect a minimum number of different chemicals in the same container.

5.2.2.2.1 Do not pour all of the experiments into one container for collection.

5.2.2.2.2 Each experiment should be in a separate container for waste collection.

5.2.2.3 Collect chemicals by disposal groups as listed below.
5.2.2.4 Maintain 1 to 1 1/2 inches of air space in the top of any container.
5.2.2.5 Keep containers closed at all times except when materials are being added. (i.e. remove funnels once waste is poured up and screw on cap)
5.2.2.6 Transfer materials inside of a chemical fume hood.
5.2.2.7 Maintain hazardous waste collection containers inside of secondary containment labeled “Satellite Accumulation Area”.
5.2.2.7.1 Clean up any spills or residual chemicals on containers immediately upon discovery.
5.2.2.8 Chemical compounds that decompose to dangerous explosive compounds (e.g., dry picric acid, expired ethyl ether) require special handling. Do not move the container. Contact EH&S immediately upon discovery.

5.2.3 Container Labels
5.2.3.1 Label and date each waste container with its contents when the first product enters the container. Update the label each time a different material is added. The full chemical name must be written out on the waste label or the container will not be collected.
5.2.3.1.1 All containers must be labeled ‘Hazardous Waste’, dated, and full chemical name listed.
5.2.3.2 Complete and attach an EH&S Hazardous Waste tag to each waste container. The container will not be picked-up without a completed tag. Tags are available through EH&S at 328-6166 or safety@ecu.edu, on the EH&S Hazardous Waste website.
5.2.3.3 The generator must fill in all information on the label except the gray EH&S use box.
5.2.3.4 List all chemicals by name in the content section. (Chemical formulas or abbreviations are not acceptable.) Include the names of non-hazardous components (i.e. water).
5.2.3.5 Identify the % of each component in each container in the % column. Each tag must equal 100%.
5.2.3.6 Enter the total amount of product in the container on the line marked Amount.
5.2.3.7 Sign the Generator Signature line on the bottom of the tag.
5.2.3.8 Attach the tag to the container with a rubber band, wire or string.

5.2.4 Pick-up Process
5.2.4.1 Contact EH&S for pick up at safety@ecu.edu to schedule a pick-up when the waste container is ¾ full and before one year from accumulation start date. Conditionally Exempt Small Quantity Generators (Carol Belk, Harris Print Shop, Ward Sports Medicine, ECU Women’s Physicians and West Research Campus) must schedule a waste pick-up within one year of accumulation start date.
5.2.4.2 Provide a list of chemicals for pick-up on the EH&S Hazardous Chemical Waste Pick-up Request form located on the EH&S web site.
5.2.4.3 Waste will be picked up on the regularly scheduled weekly pick-up day unless special arrangements are necessary. No more than 6 4L bottles will be collected from individual labs each week.
5.2.4.4 Dangerously reactive materials cannot be collected on the normal pick-up route. Contact EH&S to arrange for a special pick up.
5.2.4.5 Large-scale pick-ups (e.g., lab clean-outs) will be done by special arrangement.
5.2.4.6 Improperly packaged or labeled waste will not be accepted.

5.2.5 Drain Disposal

5.2.5.1 No chemical may be disposed to the drain without prior EH&S approval.
5.2.5.2 Approved material disposed to the drain shall be logged on a drain disposal log form including the disposal date, chemical name, discarded amount, pH and responsible party. (See the EH&S web site for further instruction and disposal form.)
5.2.5.3 Flush drain system with water at a minimum 3:1 ratio following all drain disposals.

5.3 RECY-CHEM: any unwanted, unopened chemical, which another researcher may be able to use.
5.3.1 Send an email request to EH&S at safety@ecu.edu requesting pick-up of a surplus chemical for redistribution through the RECY-CHEM program.
5.3.1.1 Include the name of the chemical, quantity, location in laboratory, and indicate if the bottle has been opened.
5.3.1.2 Mark the bottle with a note indicating that the container is intended for redistribution.
5.3.1.3 Improperly packaged or labeled surplus stock will not be accepted.
5.3.1.4 Materials not accepted for RECY-CHEM due to age or condition must be relabeled by the laboratory staff for disposal through the ECU hazardous waste disposal system.

5.4 The Radiation Safety Office will collect radioactive waste. Leave a voice mail at 744-3867.

5.5 The Biological Safety Office will collect biological waste. Leave a voice mail at 744-3867.

5.6 Unknown or unidentified materials will not be accepted and must remain in the laboratory until it can be picked-up for disposal by the waste contractors. Departments may be charged directly for any costs associated with identification and disposal of an unknown material.

5.7 Glass and Sharps

5.7.1 Sharps
5.7.1.1 Used or contaminated needles, syringes, small bore pipettes, slides, lancets, scalpels and razor blades are to be placed in a red sharps container available through the Biological Safety Office.
5.7.1.2 No part of a sharp may extend beyond the cap of the sharps container at any time.
5.7.1.3 Seal sharps container when they reach ¾ full and call the Biological Safety Office at 744-3867 for disposal.

5.7.2 Broken Glass
5.7.2.1 Place uncontaminated large bore pipettes, broken laboratory glass, and broken plastic into a small rigid cardboard box.
5.7.2.2 Label the box Broken Glass.
5.7.2.3 Seal the box when ¾ full for housekeeping to transport to the dumpster.

5.8 Spills

5.8.1 Chemicals
5.8.1.1 Laboratory user may clean up small spills when they have the necessary materials in the laboratory and have the appropriate training to clean it up safely. (See the EH&S web page for specific spill clean-up recommendations.)
5.8.1.2 All spills involving mercury must be reported to EH&S immediately at 328-6166.
5.8.1.3 Spills involving a large quantity of material, high level of toxicity, materials capable of causing damage to the laboratory structure, or a material the laboratory user is not comfortable with should be referred to EH&S at 328-6166.
5.8.1.4 Spills that the user cannot clean up that occur after normal business hours should refer to ECU Police by calling 911 (from hard lined ECU telephone). If calling from a cellular phone from any campus call 328-6787. Evacuate the area and wait to meet ECU Police and/or EH&S.

5.8.2 Radioactive materials - Contact the Radiation Safety Office at 744-2070 for instructions.

5.8.3 Biological or infectious materials - Contact the Biological Safety Office at 744-2070 for instructions.

6.0 MEDICAL CONSULTATION

6.1 All accidents/potential exposures/near misses must be reported to Laboratory Supervisors immediately. An accident report must be completed and submitted to EH&S.

6.2 Availability - All employees who work with hazardous chemicals will have an opportunity to receive medical attention and any necessary follow-up care through the Workers' Compensation Program at no cost under the following circumstances (NOTE: Students who work with hazardous chemicals should seek medical attention and any necessary follow-up care through ECU Student Health Services. Lab Supervisor must complete Supervisor Incident Investigation form and injured student must complete a Student Statement of Injury form):

6.2.1 When the employee develops signs or symptoms associated with a hazardous chemical to which the employee may have been exposed in the laboratory.

6.2.2 When exposure monitoring reveals an exposure level above an action level or permissible exposure limit for an OSHA regulated substance for which there is a medical surveillance requirement.

6.2.3 When an event likely to produce a hazardous exposure occurs while the employee is in the laboratory. (E.g., a spill, leak or explosion.)

6.3 Options

6.3.1 Life or limb threatening injury or illness

6.3.1.1 Dial 911; (Notify dispatchers of potential contamination to assure prompt and appropriate care).

6.3.1.2 Proceed to the Vidant Hospital Emergency Room; for outlying facilities, proceed to local hospital.

6.3.1.3 Notify your Laboratory Supervisor as soon as possible.

6.3.1.4 Notify EH&S at 328-6166 as soon as possible.

6.3.2 Non-life or limb threatening injury or illness

6.3.2.1 Notify your Laboratory Supervisor.

6.3.2.2 Call the EH&S Worker’s Compensation Manager, 328-6166.

6.3.2.3 Worker’s Compensation Manager, based upon the recommendation of a licensed physician or physician’s assistant, will make referral to the appropriate health care provider for necessary medical treatment.

6.4 Information

6.4.1 The following information should be provided to the attending physician by the laboratory user or laboratory supervisor:

6.4.1.1 Identity of the hazardous chemical to which the laboratory user may have been exposed. (Including the SDS if available. EH&S will assist in obtaining this if necessary);

6.4.1.2 Description of the conditions under which the exposure occurred; and

6.4.1.3 Description of the symptoms experienced by the employee.

6.4.2 The following information should be provided to EH&S:

6.4.2.1 The above listed information; and
6.4.2.2 A completed copy of the Workers' Compensation Package Form (available through your departmental office, EH&S or the EH&S Worker's Compensation web site).

6.4.3 The following information should be provided by the examining physician and must be provided to the exposed worker:

6.4.3.1 Recommendations for further medical follow-up.
6.4.3.2 The results of the medical examination and any associated tests.
6.4.3.3 Any medical condition revealed during the examination that may place the individual at increased as a result of exposure to a hazardous chemical in the workplace.
6.4.3.4 A statement that the worker has been informed of the results of the consultation/medical examination and any medical condition that may require further examination or treatment. This must not to reveal any specific findings/diagnosis unrelated to occupational exposure.

6.5 Follow-up

6.5.1 All events that require medical treatment must be reported to EH&S Workers’ Compensation Manager as soon as possible. No payment for medical treatment will be made until the Workers’ Compensation Manager has reviewed the case. Contact EH&S at 328-6166 or safety@ecu.edu.

6.5.2 Each incident will be investigated by the laboratory supervisor and/or EH&S in an attempt to identify potential causal factors and possible corrective actions.