

# Chemical Hygiene Plan

## REG05.20.02 Current Version

**Authority:** Chancellor

**History:** 2010, Chemical Hygiene Plan Placed in University Policy Manual after EXPEDITED REVIEW, transitioned without substantive change from prior version, March 25, 2013.

### **Related Policies:**

**Additional Resources:** [OSHA 29 CFR 1910.1450](#), [OSHA 29 CFR 1910.subpart Z](#), [Lab Safety Index](#)

**Contact Information:** Health Sciences Coordinator, 252-328-6166  
Assistant Director, 252-328-6166 Associate Vice Chancellor,  
252-328-6166

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## 1. Introduction

### 1.1. Purpose

1.1.1 The purpose of this regulation is to provide a plan for East Carolina University to protect 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 (OSHA 29 CFR 1910.1450 , <http://www.jmu.edu/pubsafety/safetyplan.shtml>).

### 1.2. Application

1.2.1 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:

1.2.1.1 Handling or use of chemicals occurs on a "laboratory scale" (work involves containers which can easily and safely be manipulated by one person);

1.2.1.2 Multiple chemicals or chemical procedures are used;

1.2.1.3 Procedures are not part of a production process or process simulation;

1.2.1.4 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

1.2.2. The Chemical Hygiene Plan (CHP) is intended to provide the necessary framework for compliance with the OSHA Lab Standard.

1.2.3. While non-paid laboratory users and students are not covered by this plan, University policy requires supervisors to share its content and promote compliance with the standard operating procedures.

## 2 Responsibilities

2.1. ECU Chancellor, Vice Chancellors, Deans and Department Heads:

2.1.1 Establish laboratory safety as an institutional priority;

2.1.2. Provide adequate financial and unbiased support for chemical hygiene at ECU;

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 not less than every 3 years;

2.2.2. Support Environmental Health and Safety implementation of laboratory safety policy;

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 Senior Industrial Hygienist 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 Principal Investigators and Laboratory Supervisors in protecting employees from harm arising from chemical exposure;

2.3.3. Provide employees with initial chemical hygiene training as scheduled and upon request;

2.3.4. Assist laboratory users in locating and obtaining Material Safety Data Sheets (MSDSs) upon request;

2.3.5. Maintain a master chemical inventory;

2.3.6. Maintain a master 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 laboratory safety web site for a listing of chemical specific monitoring requirements, (<http://www.ecu.edu/oehs>)).

2.3.8. Perform annual inspections of chemical fume hoods;

2.3.9. Coordinate required medical surveillance, treatment and exposure related recordkeeping through the Workers Compensation Office;

2.3.10. Perform annual laboratory inspections;

2.3.11. Perform laboratory close-out inspections prior to principal investigators and/or laboratory staff leaving the University; and

2.3.12. Provide grant review for hazardous chemical safety issues.

2.4. Principal Investigator, Laboratory Supervisor:

2.4.1. Maintain an up-to-date copy of the ECU Chemical Hygiene Plan and ensure that laboratory personnel comply with the Plan;

2.4.2. Create appropriate laboratory specific Standard Operating Procedures (SOP) to supplement this Plan and forward to EH&S;

2.4.3. Train 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 Laboratory 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 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 and that laboratory doors are closed and locked when not occupied.

2.4.7. Assure that all chemical containers used or stored in the laboratory are properly labeled;

2.4.8. Correct identified deficiencies on laboratory inspection reports and submit a written plan of action with completion date to EH&S by the indicated date;

2.4.9. Maintain current chemical inventory and emergency contact lists and forward updated information to EH&S at least annually;

2.4.10. Assure that interim inspections are conducted using the laboratory self-inspection worksheets available on the EH&S lab safety web site.

2.4.11. Maintain employee exposure to hazardous chemicals below permissible exposure limits set forth in OSHA 29 CFR 1910.subpart Z. (See EH&S laboratory safety web page);

2.4.12. 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 laboratory users of results in a timely manner;

2.4.13. Arrange for appropriate routine medical surveillance as required by OSHA regulation for specific hazardous chemicals through EH&S;

2.4.14. Provide necessary personal protective clothing and equipment (at no charge to employees).

\*Note: Respirator use must comply with requirements of the Respiratory Protection Standard.

2.4.14.1. Users must be included in the ECU Respiratory Protection Program.

2.4.14.2. Contact EH&S before purchasing or issuing respiratory protection.

2.4.15. Assure that engineering controls are functioning properly and arrange for maintenance if required;

2.4.16. If carcinogens, reproductive toxins, or acutely toxic chemicals are used in the laboratory, identify "designated use areas" in the laboratory safety plan;

2.4.17. Ensure the availability of Material Safety Data Sheets and relevant reference materials for each chemical used or stored in the laboratory;

2.4.18. Dispose of chemical waste properly through the ECU hazardous waste disposal system;

2.4.19. Initiate EH&S medical surveillance review and follow-up of all exposure incidents;

2.4.20. Maintain records of employee exposure determinations and laboratory related exposure incidents and forward copies to EH&S;

2.4.21. Post near the telephone and maintain a current list of emergency phone numbers and evacuation procedures;

2.4.22. Post emergency contact information on the outside of the laboratory door;

2.4.23. Complete the laboratory close-out form (see EH&S laboratory close-out model) and contact EH&S to schedule a final inspection within 10 business days of leaving the University;

2.4.24. Submit all grant proposals involving the use of hazardous chemicals to EH&S for approval (See EH&S Grant Review web page); and

2.4.25. 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 laboratory standard operating procedures;

2.5.2. Participate in initial and refresher training;

2.5.3. Do not remove or deface labels on incoming chemical containers;

2.5.4. Immediately label all secondary containers with the chemical constituents, hazard warning, responsible party or manufacturer, and date of preparation;

2.5.5. Report all exposure incidents or hazardous conditions to your Laboratory Supervisor;

2.5.6. Use provided materials to become familiar with the hazards associated with the chemicals and procedures used in your laboratory and use prescribed hazard controls (PPE, Engineering Controls, Work Practice);

2.5.7. Request information or training when unsure about how to handle a hazardous chemical or procedure;

2.5.8. Inform supervisor of any identified hazard or potential hazard;

2.5.9. Perform only authorized work, preparations and experiments in the laboratory.

### 3. Training

#### 3.1 Chemical Hygiene Training:

3.1.1 EH&S staff provides initial Chemical Hygiene Training to all laboratory employees in general sessions.

3.1.2 Chemical Hygiene Training is available on the EH&S laboratory safety web site for individuals unable to attend the class.

3.1.3 Additional training sessions can be scheduled for groups upon request.

3.1.3.1 To request training send an email to [safety@ecu.edu](mailto:safety@ecu.edu).

3.1.4 All laboratory employees will be required to attend refresher training every three years and/or after review/revision of the Chemical Hygiene Plan.

#### 3.1.5 Content of Training:

3.1.5.1 Methods and observations that may be used to detect the presence or release of a hazardous chemical;

3.1.5.2 Permissible exposure limits and exposure guidelines;

3.1.5.3 Physical and health hazards of chemicals;

3.1.5.4 Measures employees can take to protect themselves from these

hazards;

3.1.5.5 The content of this Plan, its location and availability;

3.1.5.6 Signs and symptoms associated with exposure to hazardous chemicals;

3.1.6 Information:

3.1.6.1 The entire text of the Occupational Exposure to Hazardous Chemicals in Laboratories standard (29 CFR 1910.1450) is available on the EH&S laboratory safety web page;

3.1.6.2 Material Safety Data Sheets (MSDS) detailing chemical or mixture specific physical and hazard assessment information are available on the MSDS web page at <http://www.ecu.edu/cs-admin/oehs/ih/MSDS.cfm>.

3.1.6.3 Reference materials including access to MSDS, chemical profiles and hazard information is located on the EH&S Lab Safety web page (<http://www.ecu.edu/oehs>);

3.1.6.4 How to Read a MSDS a short, section-by-section explanation of the MSDS components available on the Laboratory Safety Resource Index at <https://author.ecu.edu/cs-admin/oehs/MSDS-Guide.cfm> )

3.2 Laboratory Specific Training:

3.2.1 Each laboratory supervisor will provide laboratory specific training. Training will include:

3.2.1.1 Location of emergency equipment such as eyewash stations, fire extinguishers, fire pull stations, safety showers, etc.;

3.2.1.2 How to locate and use personal protective equipment in the laboratory;

3.2.1.3 Emergency Evacuation Plan, including exits, evacuation routes and designated meeting locations;

3.2.1.4 Chemical storage and associated hazards and EH&S waste disposal procedures;

3.2.1.5 Location of designated areas for use of carcinogens, reproductive toxins or acutely toxic substances;

3.2.1.6 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 or methodologies;

and

3.2.1.7 A record of laboratory specific training, including the trainees signature and list of items covered shall be maintained in each laboratory (see Lab Specific Training Documentation Form). Lab Specific Training Documentation Form

3.2.1.7.1 A copy of all training records shall be available for review by EH&S during annual laboratory inspections.

#### 4. Standard Operating Procedures

4.1 The following standard operating procedures are general safety standards applicable to all ECU laboratories.

4.1.1 Individual laboratories should supplement these with laboratory specific standard operating procedures.

4.1.2 EH&S can assist supervisors in choosing appropriate personal protective equipment.

##### 4.1.2.1 Personal Protection:

4.1.2.1.1 The employees department, without cost to the employee, must supply personal protective equipment.

4.1.2.1.2 Protective equipment remains the property of the University.

4.1.2.1.3 The laboratory supervisor will identify additional protective devices required in individual laboratories.

##### 4.1.2.1.4 Eye Protection:

4.1.2.1.4.1 All people in laboratories, including visitors, must wear appropriate ANSI approved eye protection when the potential exists for eye injury.

4.1.2.1.4.2 Safety goggles or glasses with side shields may be used as appropriate.

4.1.2.1.4.3 Standard prescription eyeglasses are not sufficient with chemical use, high/low temperature, high/low pressure, compressed gas use, vibrating or rotating apparatus use, and continuous operations;

4.1.2.1.4.4 Contact lenses may be worn in the laboratory with appropriate safety glasses or splash goggles;

4.1.2.1.4.5 Face shields and/or standing guards must be available where face or neck protection is required.

4.1.2.1.4.5.1 Such shields do not replace the need for safety glasses.

4.1.2.1.5 Protective Clothing:

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

4.1.2.1.5.2. Laboratory users must wear clothing that covers exposed arms and legs while working;

4.1.2.1.5.3. Laboratory users must wear a closed laboratory coat;

4.1.2.1.5.4. Laboratory coats must be removed before leaving the laboratory;

4.1.2.1.5.5. Clothing worn in the laboratory must be laundered separately from personal laundry;

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

4.1.2.1.6 Respiratory Protection:

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

4.1.2.1.6.2 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.

4.1.2.1.7 Gloves:

4.1.2.1.7.1 Use a glove that is compatible with the chemical(s) in use. (See ECU Lab Safety web page for more information, <http://www.ecu.edu/oehs>).

4.1.2.1.7.2 Remove gloves before leaving the laboratory or handling uncontaminated items (e.g. a doorknob or telephone receiver).

4.1.2.1.7.3 Wash hands immediately after removing gloves.

4.1.2.1.7.4 Clean or discard gloves immediately after use (consistent with use and contamination).

4.1.2.1.7.5 Inspect gloves to assure the absence of wear, cracks or

discoloration before use.

4.1.2.1.7.6 Do not use disposable latex gloves for chemical protection. (See the EH&S Laboratory Safety web page for more information, <http://www.ecu.edu/oehs>.)

4.1.2.1.8 Personal Hygiene:

4.1.2.1.8.1. Do not prepare, store or consume food or beverages in the laboratory.

4.1.2.1.8.2 Coffee pots, lunch storage, etc. must be maintained in a location separated by a wall from the chemical laboratory.

4.1.2.1.8.2. Do not smoke, use or store tobacco products in the laboratory.

4.1.2.1.8.3. Do not apply cosmetics in the laboratory.

4.1.2.1.8.4. Do not use deionized water or laboratory ice for personal consumption.

4.1.2.1.8.5. Wash hands and arms thoroughly before leaving the laboratory, even if gloves have been worn.

4.1.2.1.8.6. Never pipette by mouth.

4.1.2.1.8.7. Do not smell or taste chemicals.

4.1.2.1.8.8. Long hair and loose clothing must be constrained.

4.1.2.2. Laboratory Practice:

4.1.2.2.1. Transporting Chemicals:

4.1.2.2.1.1. Cap all containers before transporting.

4.1.2.2.1.2. 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.

4.1.2.2.1.3. Use freight elevators for chemical transport where available.

4.1.2.2.1.4. No chemical containers may be transported outside a University building without prior approval from EH&S.

4.1.2.2.1.5. Ground all metal containers when dispensing flammable liquids.

4.1.2.2.1.6 Only small quantities of flammable liquids should be transferred to glass containers.

4.1.2.2.2. Chemical Labeling:

4.1.2.2.2.1. Labels must be maintained on all incoming chemical containers.

4.1.2.2.2.2. Torn or defaced labels must be replaced immediately.

4.1.2.2.2.3 Any style of label that maintains the identity of the hazardous chemical, appropriate hazard warnings, expiration date (if applicable) and name and address of the manufacturer or importer may be used.

4.1.2.2.2.4. Secondary containers must be immediately labeled with the name of the product, hazard warning, and date of preparation and name of the responsible party.

4.1.2.2.3. Chemical Purchase:

4.1.2.2.3.1. Choose the least hazardous chemical that will perform for use in laboratory procedures.

4.1.2.2.3.2. Purchase the smallest quantity of hazardous chemicals necessary to complete laboratory procedures.

4.1.2.2.3.3. Chemical purchases with personal funds for use in University laboratories are prohibited.

4.1.2.2.3.4. Distance Education laboratory kits and protocols must have prior approval from EH&S.

4.1.2.2.4. Chemical Storage:

4.1.2.2.4.1. Minimize the quantity of chemicals stored in the laboratory. Be particularly aware of materials with a high hazard or shelf life, including peroxide formers.

4.1.2.2.4.2. 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.

4.1.2.2.4.3. Store chemicals in compatibility groups (see ECU Lab Safety web page for additional information).

4.1.2.2.4.4. A maximum total of 10 gallons of flammable liquids may be stored in a laboratory outside of a flammable storage cabinet.

4.1.2.2.4.5. Store all chemicals in a manner that minimizes potential spillage onto personnel, equipment and other chemical containers.

4.1.2.2.4.6. Chemicals should be stored in closed cabinets.

4.1.2.2.4.6.1 If open shelving must be used, it must be secured to the wall.

4.1.2.2.4.6.2 Each shelf must have a minimum  $\frac{3}{4}$  inch lip.

4.1.2.2.4.7. Store corrosives and liquids below eye level (4 to 4.5 feet).

4.1.2.2.4.8. Provide a barrier between compatibility groups in storage. (E.g., use shallow tubs capable of containing a container spill).

4.1.2.2.4.9. Inspect container and label integrity as part of the weekly laboratory inspection checklist.

4.1.2.2.5. Housekeeping:

4.1.2.2.5.1. Keep chemical use areas clean and free from contamination. (To protect staff safety, Housekeeping Services will not clean bench tops or other laboratory areas where chemical contamination is possible.)

4.1.2.2.5.2. Close and cap all chemical containers not in use.

4.1.2.2.5.3. Clean drips and/or spillage off of container exteriors immediately.

4.1.2.2.5.4. Maintain minimal equipment on working surfaces.

4.1.2.2.5.5. Maintain clear exits and aisles.

4.1.2.2.5.6. Maintain clear access to fire extinguishers, emergency eyewash and safety shower equipment.

4.1.2.2.5.7. Label all doors that are blocked on the interior side of the door and not intended for use.

4.1.2.2.5.8. Keep storage items out of hallways and stairwells. (Such items may be removed to campus surplus without notice).

4.1.2.2.5.9. Store all supplies and non-floor mounted equipment 12 inches or more off the floor.

4.1.2.2.5.10. Follow the Contaminated Surplus Property Policy when transferring or surplusing laboratory equipment.

#### 4.1.2.2.6. Compressed Gas Cylinders:

4.1.2.2.6.1. Must be installed and leak tested by laboratory personnel who are trained to connect the cylinder properly.

4.1.2.2.6.2. Must be secured in an upright position and double-chained at all times.

4.1.2.2.6.3. Must be capped when not in use.

4.1.2.2.6.4. Must be fully labeled including cylinder content and status (full, empty, or in-service).

4.1.2.2.6.5. Must be used with a compatible regulator and other auxiliary equipment.

4.1.2.2.6.6. Assure that all regulator threads match those on the cylinder valve outlet.

#### 4.1.2.3. Personal Safety:

##### 4.1.2.3.1. Laboratory Access:

4.1.2.3.1.1. No children under 12 years of age may be present in any laboratory where hazardous chemicals are stored or used.

4.1.2.3.1.2. Laboratory staff must accompany visitors to the laboratory at all times and provide the necessary training.

4.1.2.3.1.2.1. All visitors to the Health Sciences Campus must comply with the Brody School of Medicine Student/Visitor Policy.

4.1.2.3.1.2..2. All visitors to the East Campus must be approved by the hosting Department Chair.

4.1.2.3.1.3. Laboratory doors must be locked when the laboratory is unoccupied by laboratory staff.

4.1.2.3.1.4. Laboratory 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.

4.1.2.3.1.4.1. A copy of the laboratory chemical inventory, individual laboratory safety plans and current procedures should be provided. (See the EH&S laboratory safety web site for additional resources, <http://www.ecu.edu/oehs>).

4.1.2.3.1.5. Administrative, clerical and other non-laboratory

personnel are prohibited from maintaining workstations in a laboratory.

4.1.2.3.1.6 University property, including laboratory equipment and chemical containers, may not be removed from University facilities.

4.1.2.3.1.7 Horseplay will not be tolerated in the laboratory.

4.1.2.3.1.8 No laboratory user should work alone.

4.1.2.3.1.8.1 If circumstances require working alone, the Laboratory Supervisor must be notified and arrangements made to assure the workers safety.

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

4.1.2.3.1.9.1. Laboratory Supervisors review and permission;

4.1.2.3.1.9.2. Fail-safe provisions such as the following:

4.1.2.3.1.9.2.1 A temperature sensor attached to the reflux apparatus to stop the reaction when cooling is lost;

4.1.2.3.1.9.2.2 Clamp flasks to prevent vibration movement;

4.1.2.3.1.9.2.3 Secure/clamp condenser hose connections to prevent a connection break;

4.1.2.3.1.9.2.4 Catch pans or trays placed under apparatus to collect potential spills;

4.1.2.3.1.9.2.5 Emergency instructions including the nature of the operation, identity of hazardous materials involved, location of emergency cut off switches and contact information for the individual most familiar with the operation posted outside of the door; and laboratory lights left on.

4.1.2.3.2. Eyewash Stations:

4.1.2.3.2.1. Must meet the requirements of ANSI Z358.1-2009.

(Portable eyewash bottles or drench hoses will not meet this requirement.)

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

4.1.2.3.2.3. Use should be followed by appropriate medical treatment.

4.1.2.3.2.4. Must be operated weekly to assure proper function and minimize bacterial contamination.

4.1.2.3.2.5. Shall be tested at least annually by Facilities Services.

4.1.2.3.2.6. Access to the equipment must be unimpeded.

4.1.2.3.3. Safety Showers:

4.1.2.3.3.1. Must meet the requirements of ANSI Z358.1-2009.

4.1.2.3.3.2. Use should be followed by appropriate medical treatment.

4.1.2.3.3.3. Shall be tested at least annually by Facilities Services.

4.1.2.3.3.4. Access to the equipment must be unimpeded.

4.1.2.3.4. Fire Extinguishers:

4.1.2.3.4.1. 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.

4.1.2.3.4.2. Facilities Services will inspect all fire extinguishers monthly.

4.1.2.3.4.3. It is University Policy to evacuate and activate the fire alarm upon the discovery of a fire.

4.1.2.3.4.4 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).

4.1.2.4. Laboratory Controls:

4.1.2.4.1. Ventilation:

4.1.2.4.1.1. General room ventilation patterns must not be altered. (Do not block room air supply grills, return duct grills or remove drop ceiling tiles).

4.1.2.4.1.2. 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).

4.1.2.4.1.3. Local exhaust should be used to capture point source discharges of toxic chemicals from apparatus as appropriate.

4.1.2.4.1.4. 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.).

4.1.2.4.2. Chemical Fume Hoods:

4.1.2.4.2.1. Use the chemical fume hood for all operations that might result in an odoriferous, volatile, toxic or harmful release.

4.1.2.4.2.2. Assure that the hood is drawing properly prior to use. (A mounted monometer, digital display or sash mounted telltale may be used).

4.1.2.4.2.3. Work at least 6 inches into the fume hood.

4.1.2.4.2.4. 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.

4.1.2.4.2.5. Maintain the sash no higher than the posted height while in use.

4.1.2.4.2.6. Do not use the fume hood for storage. (Vented storage cabinets should be used for vented storage.)

4.1.2.4.2.7. 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.

4.1.2.4.2.8. No ductless or recirculating fume hoods may be in ECU facilities.

4.1.2.4.2.9. All fume hoods will be inspected and tested at least annually by EH&S.

4.1.2.4.2.10. All fume hood installations and removals must be in accordance with State and Federal regulations and be reviewed by EH&S.

4.1.2.4.3. Specialized Hoods:

4.1.2.4.3.1. Perchloric Acid Hoods

4.1.2.4.3.1.1. Water washed hoods are available on campus for processes requiring the use of hot perchloric acid;

4.1.2.4.3.1.2. Hoods will be evaluated at least annually by EH&S;

4.1.2.4.3.1.3. Perchloric Acid Hood repair work orders must be reviewed by EH&S prior to the commencement of work. (Notify EH&S at 328-6166 or [safety@ecu.edu](mailto:safety@ecu.edu)).

#### 4.1.2.4.3.2. Radiation Hoods

4.1.2.4.3.2.1. The Radiation Safety Office inspects radiation use hoods at least annually.

4.1.2.4.3.2.2. For more information contact the Radiation Safety Office at 744-2418.

#### 4.1.2.4.4. Biosafety Cabinets

4.1.2.4.4.1. Biosafety Cabinets are inspected and certified by the Biological Safety Office annually and when the unit must be moved.

4.1.2.4.4.2. Contact the Biological Safety Office for more information at 744-3437.

#### 4.1.2.4.5. Glove boxes:

4.1.2.4.3.4.1. Seals and gloves must be inspected prior to each use of a glove box.

4.1.2.4.3.4.2. Glove boxes will be evaluated by EH&S annually.

4.1.2.4.3.4.3. Glove boxes using radioactive or biological material will be referred to the Radiation and Biological Safety Offices.

#### 4.1.2.4.6. Other Laboratory Control Equipment:

4.1.2.4.6.1. Laboratory staff shall inspect specialized laboratory control equipment prior to each use to insure function.

4.1.2.4.6.2. Local exhaust should be used to capture point source discharges of toxic chemicals from apparatus and shall be evaluated annually by EH&S.

### 5. Chemical Waste Management

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

#### 5.1.1 Chemical Waste for Disposal:

##### 5.1.1.1 Containers:

5.1.1.1.1 Collect materials in original type containers that are compatible with the collected material.

5.1.1.1.2 Collect material in containers free of incompatible residue.

5.1.1.1.3 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.)

5.1.1.1.4. Containers must be free from exterior damage or contamination.

5.1.1.2. Collection:

5.1.1.2.1. Collect waste by compatibility groups.

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

5.1.1.2.3. Collect chemicals by disposal groups as listed below.

Acids (unless neutralized as end step in procedure) Bases (unless neutralized as end step in procedure) Ethers/Peroxide Forming Agents  
Sulfides Heavy Metals Chlorinated Solvents  
Antineoplastic Drugs Acutely Toxic Wastes Alcohols /Non-Chlorinated Solvents  
Ethidium Bromide/Acrylamide  
(Separate liquids. Combine gels) Amines

5.1.1.2.4. Maintain 1 to 1 1/2 inches of air space in the top of any container.

5.1.1.2.5. Keep containers closed at all times except when materials are being added.

5.1.1.2.6. Transfer materials inside of a chemical fume hood.

5.1.1.2.7. Maintain hazardous waste collection containers inside of secondary containment labeled ,Satellite Accumulation Area.

5.1.1.2.8. Chemical compounds that decompose to dangerous explosive compounds (e.g., dry picric acid, out-dated ethyl ether) require special handling.

5.1.1.2.8.1 Do not move the container and contact EH&S immediately upon discovery.

5.1.1.3. Container Labels:

5.1.1.3.1. Label and date each waste container with its content when the

first product enters the container. (Update the label each time a different material is added).

5.1.1.3.2. Complete and attach an EH&S Hazardous Waste tag to each waste container.

5.1.1.3.2.1 The container will not be picked-up without a completed tag.

5.1.1.3.2.2 Tags are available through EH&S at 328-6166 or [safety@ecu.edu](mailto:safety@ecu.edu), on the Hazardous Waste website or through the Medical School Storeroom.

5.1.1.3.3 The generator must fill in all information on the label except the gray EH&S use box.

5.1.1.3.4 List all chemicals by name in the content section.

5.1.1.3.4.1 Chemical formulas or abbreviations are not acceptable.

5.1.1.3.4.2 Include the names of non-hazardous components (i.e. water).

5.1.1.3.5. Identify the percent (%) of each component in each container in the percent (%) column.

5.1.1.3.5.1 Each tag must equal 100%.

5.1.1.3.6. Enter the total amount of product in the container on the line marked - Amount.

5.1.1.3.7. Sign the Generator Signature line on the bottom of the tag.

5.1.1.3.8. Attach the tag to the container with a rubber band, wire or string.

5.1.1.4. Pick-up process:

5.1.1.4.1. Contact EH&S for pick up at [safety@ecu.edu](mailto:safety@ecu.edu) schedule a pick-up when the waste container is  $\frac{3}{4}$  full and before one year from accumulation start date.

5.1.1.4.1.1 Conditionally Exempt Small Quantity Generators (Carol Belk, Harris Print Shop, Ward Sports Medicine, ECU Womens Physicians and West Research Campus) must schedule a waste pick-up within two years of accumulation start date.

5.1.1.4.2. 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.

5.1.1.4.3. Waste will be picked up on the regularly scheduled weekly pick-up day unless special arrangements are necessary.

5.1.1.4.3.1 No more than 6 4L bottles will be collected from individual laboratories each week.

5.1.1.4.4. Dangerously reactive materials cannot be collected on the normal pick-up route.

5.1.1.4.4.1 Contact EH&S to arrange for a special pick up.

5.1.1.4.5. Large-scale pick-ups (e.g., laboratory clean-outs) will be done by special arrangement.

5.1.1.4.6. Improperly packaged or labeled waste will not be accepted.

5.1.1.5. Drain Disposal:

5.1.1.5.1. No chemical may be disposed to the drain without prior EH&S approval.

5.1.1.5.2. 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.)

5.1.1.5.3. Flush drain system with water at a minimum 3:1 ratio following all drain disposals.

5.1.2. Recyclable Chemicals (RECY-CHEM)

5.1.2.1 ECU recycles unwanted, unopened chemicals, which another researcher may be able to use.

5.1.2.2. Attempt to redistribute unused chemicals internally.

5.1.2.3. If unable to locate a user, send an email request to EH&S at [safety@ecu.edu](mailto:safety@ecu.edu) requesting pick-up of a surplus chemical for redistribution through the RECY-CHEM program.

5.1.2.3.1. Include the name of the chemical, quantity, location in laboratory, and indicate if the bottle has been opened.

5.1.2.3.2. Mark the bottle with a note indicating that the container is intended for redistribution.

5.1.2.3.3. Improperly packaged or labeled surplus stock will not be accepted.

5.1.2.3.4. 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.

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

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

5.5. 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.

5.5.1 Departments may be charged directly for any costs associated with identification and disposal of an unknown material.

5.6. Sharps and Broken Glass:

5.6.1. Sharps:

5.6.1.1. 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.

5.6.1.2. No part of a sharp may extend beyond the cap of the sharps container at any time.

5.6.1.3. Seal sharps container when it reaches  $\frac{3}{4}$  capacity and call the Biological Safety Office at 744-3867 for disposal.

5.6.2. Broken Glass:

5.6.2.1. Place uncontaminated large bore pipettes, broken laboratory glass, and broken plastic into a small rigid cardboard box.

5.6.2.2. Label the box - Broken Glass.

5.6.2.3. Seal the box when  $\frac{3}{4}$  full for housekeeping to transport to the dumpster.

5.7. Spills:

5.7.1. Chemicals:

5.7.1.1. 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.)

5.7.1.2. All spills involving mercury must be reported to EH&S immediately at 328-6166.

5.7.1.3. 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.

5.7.1.4. Spills that the user cannot clean up that occur after normal business hours should be referred to 911 on the Main Campus and 744-2246 on the Health Sciences Campus.

5.7.1.4.1 Evacuate the area and wait to meet ECU Police and/or EH&S.

5.7.2. Radioactive materials - Contact the Radiation Safety Office at 744-2418 for instructions.

5.7.3. Biological or infectious materials - Contact the Biological Safety Office at 744-3437 for instructions.

## 6. Medical Consultation

6.1. Availability - All employees who work with hazardous chemicals will have an opportunity to receive medical consultation at no cost under the following circumstances:

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

6.1.2. 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.

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

6.2. Options:

6.2.1. Life or limb threatening injury or illness:

6.2.1.1. Dial 911 (Notify dispatchers of potential contamination to

assure prompt and appropriate care).

6.2.1.2. Proceed to the Pitt County Memorial Hospital Emergency Room.

6.2.1.3. Notify your Laboratory Supervisor as soon as possible.

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

6.2.2. Non-life or limb threatening injury or illness:

6.2.2.1. Notify your Laboratory Supervisor.

6.2.2.2. Call the EH&S Workers Compensation Office, 328-6166.

6.2.2.3. Workers Compensation Manager, based upon the recommendation of a licensed physician or physicians assistant, will make referral to the appropriate health care provider for necessary medical treatment.

6.3. Information:

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

6.3.1.1. Identity of the hazardous chemical to which the laboratory user may have been exposed.

6.3.1.1.1 Include the MSDS if available.

6.3.1.1.2 EH&S will assist in obtaining this if necessary;

6.3.1.2. Description of the conditions under which the exposure occurred;

6.3.1.3. Description of the symptoms experienced by the employee.

6.3.2. The following information should be provided to EH&S:

6.3.2.1. The above listed information;

6.3.2.2. A completed copy of the Workers Compensation Package Form (available through your departmental office, EH&S or the EH&S Workers Compensation web site.

6.4. Follow-up:

6.4.1. All events that require medical treatment must be reported to EH&S Workers Compensation office as soon as possible.

6.4.1.1 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](mailto:safety@ecu.edu)).

6.4.2. 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.

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#### EMERGENCY TELEPHONE NUMBERS

ECU Main Campus Emergency (Fire, Campus Police, Rescue, EMS) 911

ECU Health Sciences Campus Emergency (Fire, City Police, Rescue, EMS) 911

Main Campus Police 328-6150

Health Sciences Campus Police 744-2246

Office of Environmental Health and Safety  
(Fire Protection, Safety/Industrial Hygiene, Laboratory Safety,  
Environmental Management, Hazardous Waste, Workers  
Compensation) 328-6166

ECU Chemical Hygiene Officer 328-6166

Hazardous Waste Pick-up 328-6166

Radiation Safety Office 744-2418

Biological Safety Office 744-3437

Office of Prospective Health 744-2070

Main Campus Facilities Services 328-6776

Health Sciences Campus Facilities Services 744-2251

Main Campus Emergency Information Hotline (Adverse weather delays  
or cancellations) 328-0062

Health Sciences Campus Emergency Information Hotline (Adverse  
weather delays or cancellations) 744-5080

1-800-745-5181

North Carolina Poison Center (information after 911  
call) 1-800-222-1222

Duke Medical Center Poison Control Center (after 911  
call) 1-800-672-1697

Laboratory Supervisor (Name) Home:

(Office Location) Office:

#### ACCESS EH&S INFORMATION RESOURCES

Location of the Office of Environmental Health and Safety

210 East 4th Street

Greenville, NC, 27858-4353

Environmental Safety Web Page Internet

Address <http://www.ecu.edu/oehs>

Email [Safety@ecu.edu](mailto: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 2010