



Chemical Hygiene Officer Training

Created 2/2016; Revised 4/2016

Objectives



- Learn and understand the duties of the CHO position
- Become familiar with regulatory compliance issues in laboratories
- Receive a stronger background in laboratory safety and chemical hazards
- Be able to assist your College with their everyday chemical hygiene needs
- Work with Security and EHS to ensure accidents/incidents are reported properly and compliance is achieved



CHO duties and responsibilities

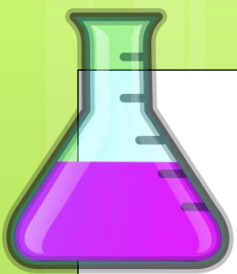
(found in UNE Safety Manual)

1. Responsible for chemical hygiene in College laboratories, providing guidance and counsel to the Laboratory Supervisors, Technicians, Department Chair and EHS pertaining to matters of chemical safety in the College.
2. They are knowledgeable of the types of experiments being conducted in college laboratories and make safety recommendations to the department faculty/staff and the EHS Director.
3. CHO's conduct annual training for laboratory and student personnel on chemical hygiene topics and serve as a role model to co-workers and provide continuing support for the implementation and enforcement of the Chemical Hygiene Plan.
4. Document that faculty, staff and students have been trained regarding the University's chemical hygiene rules and plan.

CHO duties and responsibilities

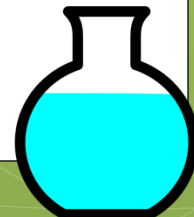
5. Make sure that the required levels of protective apparel and equipment are available and in working order.
6. Verify EHS receives copies of SDS sheets for all chemicals received within the College and that an SDS binder is maintained in the College laboratories/stockrooms for all chemicals in inventory.
7. Verify that periodic chemical inventories are updated for all laboratories and stockrooms and forwards a copy to EHS.
8. Provide the Laboratory Supervisor and/or Department Chair with concerns and recommendations for upgrading the level of lab safety, and supply Principal Investigators with chemical safety procedures when planning, presenting, and conducting a laboratory session.
9. Coordinate the development and implementation of written safety procedures for all faculty research and educational laboratories.



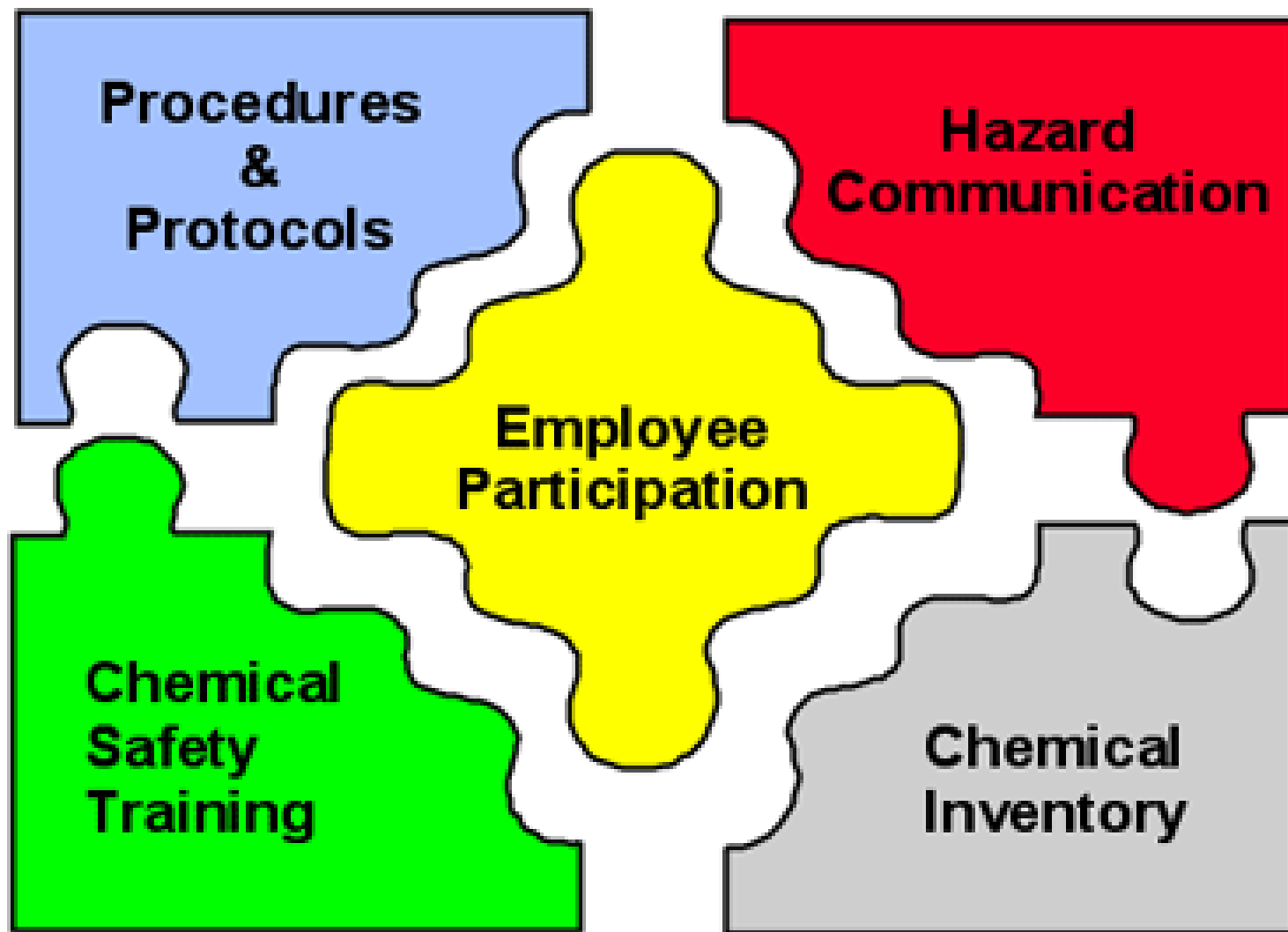


CHO duties and responsibilities

10. Identify situations of noncompliance where individuals are at risk for over-exposure to chemicals and biohazards and seek advice and guidance of the EHS in order to provide corrective action. They can close noncompliant laboratories as authorized by EHS.
11. Provide regular, non-scheduled, chemical hygiene inspections including emergency equipment in laboratories.
12. Remain current on legal requirements concerning regulated substances.
13. Always look to improve the chemical hygiene plan.
14. Periodically check on designated Satellite Hazardous Waste Accumulation Areas (SAA's) to assure that daily inspections are taking place and are logged. (Laboratory Technicians and EHS also assist in inspection of SAA logs).
15. Assist EHS in coordinating hazardous waste disposal in accordance with Federal and State regulations and attend required State, Federal and University required training.
16. May also be required to provide emergency response in the event of a chemical or biohazard exposure.



Creating Safety Culture



UNE Safety Programs

What safety programs are in place at UNE?

What is required by state and federal agencies?

UNE Safety Programs

- Respiratory Protection Program
- Hearing Conservation Program
- PPE Program
- EHS Lab Inspection Program
- Hazardous Waste Management
- Chemical Inventory and Management
- Industrial Hygiene and air quality
- Hazard Communication Program
- Employee Training
- Student Training
- Lab coat laundering
- University Wide Safety Committee
- Lab Safety Sub Committee
- CoP Safety Committee



Regulations and Compliance

- **OSHA** (Occupational Safety and Health Administration)
- **NIOSH** (National Institute of Occupational Safety and Health)
- **ME DEP** (Maine Department of Environmental Protection)
- **EPA** (Environmental Protection Agency)
- **NFPA** (National Fire Protection Association)
- **DOT** (Department of Transportation)
- **IATA** (International Air Transport Association)
- **DEA** (Drug Enforcement Administration)
- **CDC** (Centers for Disease Control)
- **NIH** (National Institutes of Health)





The UNE Safety Manual

- The purpose of the University of New England Safety Manual is to ensure the safety and health of all employees, faculty, students, staff, researchers and students on both the Biddeford and Portland campuses by enforcing policies and procedures that adhere to all State, Federal, and University rules for environmental, safety and health concerns.
- Violation of the policies and procedures contained in the Safety Manual will result in disciplinary action due to the importance of the safety and health of all persons on campus.

The UNE Safety Manual

- This manual is reviewed and updated on an annual basis to ensure compliance for all regulatory agencies and changes that may have occurred on the campuses.
- Any suggestions, revisions, or additions should be directed to the University Wide Safety Committee and/or the Director of Environmental, Health and Safety in writing.
- All Fire Safety and Medical safety concerns are handled by Campus Security; please refer to their policies and procedures on these topics.
 - Call EHS if Safety and Security is unavailable
 - You should always follow up with EHS after a safety event

The UNE Safety Manual contents:

INTRODUCTION

- **Organizational Responsibilities**
- **Consequences of Non-Compliance**
- **Compliance Assistance**
- **Conflict of Resolution Strategies**
- **Disciplinary Action**
- **University Policy on Inspections**



The UNE Safety Manual contents

- **CHAPTER 1: GENERAL RULES**
- **CHAPTER 2: FACILITIES MANAGEMENT AND SPECIFIC OPERATIONS**
- **CHAPTER 3: FORKLIFT/POWERED INDUSTRIAL TRUCK SAFETY**
- **CHAPTER 4: CONFINED SPACE ENTRY**
- **CHAPTER 5: ELECTRICAL PROTECTION PROGRAM**
- **CHAPTER 6: RESPIRATORY PROTECTION PROGRAM**
- **CHAPTER 7: HAZARD COMMUNICATION**
- **CHAPTER 8: LOCKOUT/TAGOUT**
- **CHAPTER 9: BLOOD BORNE PATHOGENS EXPOSURE CONTROL PLAN**
- **CHAPTER 10: COMPRESSED CYLINDER SAFETY**
- **CHAPTER 11: HAZARDOUS WASTE MANAGEMENT**
- **CHAPTER 12: TRAINING**
- **CHAPTER 13: UNIVERSITY WIDE SAFETY COMMITTEE**
- **CHAPTER 14: RADIATION SAFETY**
- **CHAPTER 15: HEARING CONSERVATION PROGRAM**
- **CHAPTER 16: LABORATORY SAFETY**
- **CHAPTER 17: HAZARDOUS MATERIAL/CHEMICAL INVENTORY CONTROL**
- **CHAPTER 18: PERSONAL PROTECTIVE EQUIPMENT**
- **CHAPTER 19: OFFICE SAFETY AND ERGONOMICS**
- **CHAPTER 20: ASBESTOS CONTAINING MATERIALS O&M PROGRAM**
- **CHAPTER 21: OIL CONTAINING DEVICES**
- **CHAPTER 22: RESERVED: LEAD EXPOSURE PLAN**
- **CHAPTER 23: RESERVED: INDOOR AIR QUALITY**

APPENDIX A: CONFINED SPACE ENTRY PERMIT

APPENDIX B: RESPIRATOR FIT TESTING RECORD

APPENDIX C: EXAMPLE OF RESPIRATORY PROTECTION MEDICAL EVALUATION QUESTIONNAIRE

APPENDIX D: PROCEDURES FOR CARING AND CLEANING OF RESPIRATORS

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APPENDIX N: RADIOACTIVE WASTE DISPOSAL LOG

APPENDIX O: RADIOACTIVE WASTE HOLD FOR DECAY LOG

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APPENDIX R: CHEMICAL STORAGE CHART

APPENDIX S: CHEMICAL SEGREGATION CHART

APPENDIX T: PPE SELECTION GUIDE

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APPENDIX V: HEARING CONSERVATION AREAS TESTED

APPENDIX W: FLINN CHEMICAL STORAGE SYSTEM

Respiratory Protection Program

-Chapter 6 of the UNE Safety Manual

Respiratory Protection Program

- Due to the potential risks involved from exposure to hazardous substances and atmospheres, UNE has developed a Respiratory Protection Program to protect its faculty, staff and students from contracting occupational diseases or illness caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors.



- The Respiratory Protection Program at UNE has been developed in accordance with OSHA standard 29CFR1910.134. Section 1910.134(c) states that: OSHA “requires that the employer develops and implements a written respiratory protection program with required worksite-specific procedures and elements for required respirator use.”

Written Program

- Procedures for selecting respirators
- Medical evaluation
- Fit testing procedures
- Procedures for use of respirators
- Procedures and schedules for respirator maintenance (cleaning, disinfecting, storing, inspecting, repairing, and discarding)
- Training employees on respiratory hazards, proper use, limitations and maintenance
- Procedures for evaluating program effectiveness



Training Requirements

- **Training is required:**

- prior to initial use
- annually
- changes in workplace or respirator type



- **Employee must be able to demonstrate knowledge:**

- why respirator is necessary
- limitations and capabilities of respirator
- How to use the respirator properly
- How to inspect, put on, use, check seal
- Respirator maintenance and storage
- Medical signs and symptoms that may limit the use of a respirator
- General requirement of 1910.134
- Voluntary use - train on Appendix D
- Without training injuries can occur

When do employees use respiratory protection?

- When engineering or administrative controls cannot control exposure
- Engineering controls fail
- Short term exposures, non routine situations, i.e., chemical mixing, maintenance
- Emergency situations/spills
- Confined space entries/rescues
- Animal cage cleaning



Medical Evaluation

- Required prior to fit test
- Must be performed by a physician or other licensed healthcare professional (PLHCP) using a medical questionnaire or exam
- Follow up exam if positive answer - any tests or procedures determined by PLHCP
- Provide written procedures, respirator weight, duration and frequency of use, physical effort required, temperature and humidity to PLHCP
- Written report provided to employer and employee



Additional Medical Evaluation

- Employee reports difficulties using respirator
- PLHCP, supervisor or program administrator specifies the need for further evaluation
- Observations during fit testing or program observation
- Change occurs in workplace

Fit Testing

Employees using tight-fitting face piece respirators must be fit tested:

- ☑ Prior to initial use of the respirator.
- ☑ Whenever a different respirator face piece (size, style, model or make) is used.
- ☑ At least annually thereafter.

Note: Additional fit tests must be conducted whenever conditions that could affect respirator fit develop. i.e.. Loss of weight, facial scarring, facial surgery.

- Facial hair must not inhibit the sealing surface or interfere with valve function
- Must conduct a user seal check before each use

How to use respirators:

Step 1: Inspect the respirator. To begin donning, cup the respirator in your hand with the nosepiece at finger tips allowing the headbands to hang freely below hands.

Step 2 : Position the respirator under your chin with the nosepiece up.

Step 3: Pull the top strap over your head so it rests high on the back of the head.

Step 4: Pull the bottom strap over your head and position it around neck below ears.

Step 5: Using two hands, mold the nosepiece to the shape of your nose by pushing inward while moving fingertips down both sides of the nosepiece. Pinching the nosepiece using one hand may result in less effective respirator performance.

Hearing Conservation Program

Chapter 15 of the UNE Safety Manual

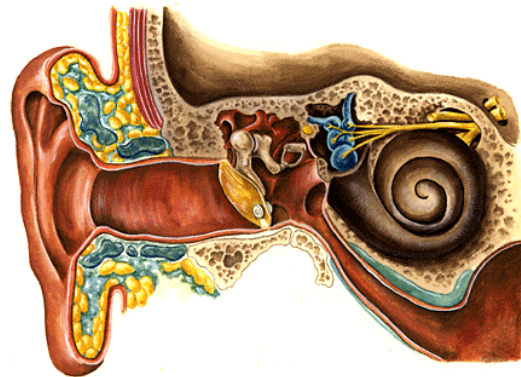
Hearing Conservation Program



- UNE will administer a continuing, effective hearing conservation program “whenever employee noise exposures equal or exceed an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of fifty percent. For purposes of the hearing conservation program, employee noise exposures shall be computed in accordance with appendix A and Table G-16a, and without regard to any attenuation provided by the use of personal protective equipment.”

Hearing Conservation Program

- The Action Level is an 8-hour TWA of 85 decibels or a dose of fifty percent, when information indicates that the employee's exposure level is equal or exceeding an 8-hour TWA of 85 decibels, UNE has developed and implemented a hearing conservation program in accordance with OSHA 29CFR1910.95.



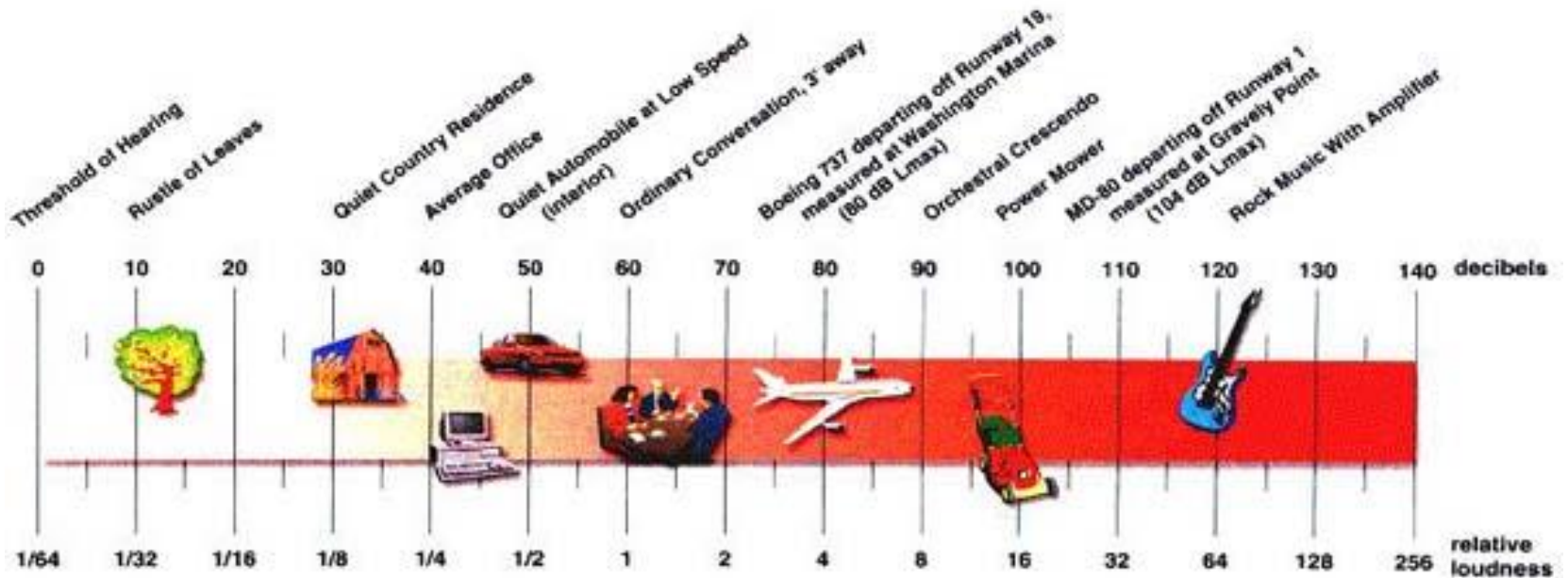
Noise Monitoring

When it is indicated that any employee's exposure level is equal to or exceeds an 8-hour TWA of 85 decibels, EHS will require the employee to participate in a monitoring program.

- 1. The monitoring program is designed to identify employees that need to be included in the program and enable EHS to provide the proper hearing protection.
- 2. When workers are highly mobile, or there are significant variations in sound levels, or conditions that may be difficult to perform area testing, than the use of representative personal sampling will be used.
- 3. Instruments used for monitoring will be calibrated to ensure accuracy.
- 4. Monitoring will take place whenever there is a change in a process, equipment, or the work area is changed in a way that it may impact additional employees.
- 5. The EHS department will notify all exposed employees if they are at or above the 8-hour TWA of 85 decibels.
- 6. Exposed employees have the right to observe all monitoring.



TYPICAL SOUND LEVELS



The **decibel (dB)** is a unit for describing sound pressure levels. A-weighted sound measurements (dBA) are filtered to reduce the effect of very low and very high frequencies, better representing human hearing. With A-weighting, sound monitoring equipment approximates the human ear's sensitivities to the different sounds of frequencies.

Audiometric Testing

The EHS department will establish and maintain an audiometric testing program available to employees at or above the 8-hour TWA of 85 decibels at no cost to the employee.

- 1. Audiometric testing must be performed by a licensed or certified audiologist, otolaryngologist, or other qualified physician.
- 2. Baseline Audiogram: Within 6 months of the employee's first exposure at or above the action level, the EHS department will establish a valid baseline audiogram against which subsequent audiograms can be compared. (Within one year if using a mobile test van for testing).
 - a. The baseline exam should be preceded by 14 hours without workplace noise exposure. (Hearing protection may be used for the 14 hour window if the employee will be exposed to workplace noise).
 - b. The employee will be notified to avoid high levels of noise outside of the workplace 14 hours before the audiogram.
 - c. After the baseline audiogram, the audiogram should be performed annually for employees exposed to 85 decibels at the 8-hour TWA.



Evaluation of Audiogram

- The annual audiogram will be compared to the baseline audiogram by a technician to see if the employee has suffered a threshold shift.
- If the annual audiogram shows a standard threshold shift, the employee will be retested within 30 days and consider the results of the re-test the annual audiogram.
- The technician will review problem audiograms and determine whether there is a need for further testing.

Standard Threshold Shift



If the comparison of the baseline audiogram to the annual audiogram indicates a standard threshold shift has occurred, the employee will be notified in writing within 21 days of the determination unless a physician determines the standard threshold shift is not work related or caused by occupational exposure.

The following steps will be taken if a threshold shift occurs:

- Employees not using hearing protection will be fitted with hearing protection, trained in its use and care, and be required to use hearing protection.
- Employees already using hearing protection will be refitted, retrained, and provided with a greater level of hearing protection if necessary.
- Additional testing may be required if a Standard Threshold Shift occurs, at the discretion of the technician performing the tests and the EHS department.

Hearing Protection

UNE will provide hearing protection at no cost to the employee to all employees who:

- Have been exposed to an 8-hour TWA of 85 decibels or greater
- Has not had a baseline audiogram established
- Have experienced a threshold shift
- Hearing protection will be replaced by UNE as necessary.
- The employee's Supervisor or Manager will ensure that hearing protection is being worn and policies are being enforced.
- Employees are given the opportunity to select their hearing protection from a variety offered by the EHS department.
- EHS will provide training to all employees on the handling and care of all hearing protection devices supplied to the employee.
- EHS will ensure proper fitting and supervise correct use of hearing protection.
- EHS is responsible for making sure that the hearing protection selected is the correct attenuation for the specific environment it will be used in.



Training and Recordkeeping

Hearing Conservation training:

- The effects of noise on hearing.
- The purpose of using hearing protection, its advantages and disadvantages, proper selection of hearing protection, and proper fitting and caring of hearing protection.
- The purpose of audiometric testing, the process of the testing, and what the results mean.

Recordkeeping:

1. Exposure measurements: An accurate record of all employee exposure measurements.
2. Audiometric testing results and records which include:
 - a. The name of the employee and their job title
 - b. The date of the audiogram
 - c. The examiner's name
 - d. The date of the last calibration of the audiometer
 - e. The employee's most recent noise exposure assessment.
 - f. The measurements of the background sound pressure levels in audiometric testing rooms.
3. The noise exposure measurement records shall be obtained for 2 years.
4. The audiometric test records will be retained for the duration of the employee's employment and are available through the Human Resources Department.
5. Records are available to employees upon request.

Personal Protective Equipment (PPE)

-Chapter 18 of the UNE Safety Manual

Personal Protective Equipment

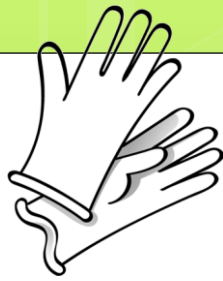
- The use of personal protective equipment (PPE) is required in specific work areas for the protection of workers from various occupational hazards.
- PPE is not a substitute for adequate engineering or administrative controls. PPE typically includes: gloves, coveralls, eye protection, respirators, etc.
- The program covers the selection, care, and use of personal protective equipment at UNE, and applies to all University personnel, contractors, and subcontractors.
- Employees who fail to wear the appropriate PPE outlined in their job description will be subject to disciplinary action by their Supervisor/Department Head.
- All required PPE will be provided by the University of New England and no cost to the employee and will be replaced/repared/replenished as needed.

Job Hazard Assessments

- Each department is required to assess the workplace to determine potential hazards that may require protective equipment for the head, eye, face, hand, or foot.
- Contact EHS for assistance performing the job hazard assessment. Departments, with the assistance of EHS, are responsible for providing affected employees with properly fitted personal protective equipment suitable for protection from these hazards.



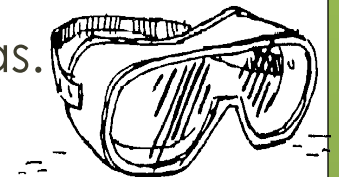
Gloves



- Each department will supply cloth, leather, rubber and other various types of gloves for distribution by choosing the appropriate material for the task being done. Consult EHS for the proper selection of glove materials for hazards involved.
- Cloth or leather gloves should never be used when handling chemicals in any form.
- Disposable rubber, latex, and nitrile gloves will be available in all laboratory settings and should be worn whenever handling hazardous or questionable materials. All gloves should be discarded after activities have been completed, before leaving the work area.

Eye/Face Protection

- Design, construction, testing and the use of devices for eye and face protection will be in accordance with the American National Standard for Occupational and Educational Eye and Face Protection, Z87 (latest edition).
- Employees may use their own eye protection, provided it meets ANSI Standard Z87 and is so labeled or provide pertinent documentation. Employee provided PPE must be approved by the Supervisor/Department Head before use.
- Face shields, welding masks, chemical splash goggles, and non-prescription safety glasses will be provided by departments as needed in designated locations or for designated tasks.
- The cost of prescription safety eyeglasses, if needed on a regular basis, may be reimbursed at a set rate through individual departments.
- Signs will be posted in designated eye protection areas.



Eye protection will be utilized by all individuals, including contractors, in University facilities and/or operations in which activities take place involving:

- Gas or electric arc welding.
- Hot molten metals.
- Heat treating, tempering or kiln filtering of any metal or other material.
- Corrosive, toxic, or explosive material.
- Compressed gas.
- UV lights and lasers.
- Chemicals: liquid and/or solid
- Unsealed sources of radioactive material.
- Infectious and potentially infectious material.
- Milling, sawing, turning, shaping, cutting, grinding, or stamping of any solid material.
- Repair or servicing of mechanical equipment which is reasonably anticipated as hazardous to the eye.
- Operations involving mechanical or physical activities that are reasonably anticipated as hazardous to the eye.
- Employees will wear face shields when exposed to flying particles (except molten metal) exist and will wear safety glasses under face shields (including welding helmets).
- Face shields will be worn when pouring cryogenic or corrosive liquids. Safety glasses or goggles for liquids will be worn under shields.
- The use of side shield is required whenever eye protection is required.

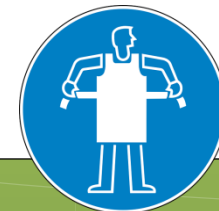
Other PPE considerations



Foot protection:

- Safety shoes with composite or steel toes may be supplied for working in areas or tasks where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole and where such employees' feet are exposed to electrical hazards.
- Chemical resistant boots: Supervisors will consult with EHS for selection and purchase when required.
- Other foot protection (such as booties and shoe covers): Supervisors will consult with EHS for their particular needs.
- Closed toed shoes are required in all laboratory settings.

Other Protective Clothing: The use of aprons, chemical suits, throw-away suits, shoe covers, etc. will be evaluated by department supervisors and EHS.



Other PPE considerations



- **Respirators:** Respirators will be selected, used, and maintained in accordance with the Respiratory Protection Program in **Chapter 6 of the Safety Manual**. No employee is to use respiratory protection until they have been enrolled in the Respiratory Protection Program, have been medically evaluated, trained and fit tested.
- **Hearing Protection:** Certain departments will supply both ear muffs and ear plugs. All ear protection used will meet the ANSI standard S3. 19 (latest edition) to attenuate levels below 90 decibels. See **Chapter 15** for the Hearing Conservation Program for more specific information. Employees should have a baseline audiogram before they begin the hearing conservation program.
- **Lab Coats:** Lab coats shall be worn in all laboratory settings along with long pants (when feasible) and close-toed shoes.

Lab Coat Laundering

- Lab coats **cannot** be laundered at a home/residence or in a public laundromat setting

- Lab coats must be laundered by a UNE facility washing machine dedicated to lab coats only

OR

- Lab coats must be laundered by a professional vending service contracted by UNE and paid for by your department or college
- If your lab coats are laundered by a service, the hazards involved in what may be on the lab coats must be specified to the vendor



Proper Lab Attire

Enforcement of proper lab attire rules

Proper lab attire

- Long pants
- Closed shoes
 - No sandals
 - No ballet flats
 - No exposed skin on feet
- Long sleeves and/or lab coat
- Gloves
- Eye protection (as needed)
- Long hair tied back
- No dangling jewelry



Marine Science Center Proper Lab Attire

- Shorts/capris may be worn in the MSC labs as long as there are **no hazardous chemicals** being handled.
- Sandals/exposed feet are acceptable in MSC labs as long as there are **no hazardous chemicals** being handles and **no equipment that may fall on feet and cause serious injuries**.
- Gloves and safety glasses may be required on as “as needed basis” depending on the type of work being performed.

****These exceptions ONLY apply in Marine Science Center laboratories and NO other labs on campus.****



Consequences

- Instructors may provide additional PPE to a student/researcher who is not dressed properly (such as a lab coat if clothes are not sufficient).
- Instructors may ask the student/researcher to leave the lab and not re-enter until they are dressed properly and safely.
- Instructors may ask the student to leave the course if they cannot or will not comply with safety rules/lab attire policies.
- Notify EHS and your Department Chair if you are having major compliance issues.

New policies?

- Dean Hey adding lab attire policies to the UNE Student Handbook?
- EHS providing information to new students at the New Student Orientation Program or Welcome Back Week?
- Instructors enforcing the policies more strictly with a discipline system in place?



The Chemical Hygiene Plan

What is the UNE Chemical Hygiene Plan?

The UNE Chemical Hygiene Plan

- The Occupational Safety and Health Administration (OSHA) require that laboratory employees be made aware of the Chemical Hygiene Plan at their place of employment (29 CFR 1910.1450).
- The University of New England, Chemical Hygiene Plan and Hazardous Materials Safety Manual, serves as the written Chemical Hygiene Plan (CHP) for laboratories using chemicals at University of New England.
- The CHP is a regular, continuing effort, not a standby or short term activity. Departments, divisions, sections, or other work units engaged in laboratory work whose hazards are not sufficiently covered in this written manual must customize it by adding their own sections as appropriate (e.g. standard operating procedures, emergency procedures, identifying activities requiring prior approval).

- Chemical Hygiene Plan Awareness Certification
- University of New England Policy Statement

PART I: THE OSHA LABORATORY STANDARD AND THE UNIVERSITY OF NEW ENGLAND CHEMICAL HYGIENE PLAN

- THE OSHA LAB STANDARD
 - EMPLOYEE RIGHTS AND RESPONSIBILITIES
 - HAZARDOUS CHEMICALS
 - SAFETY DATA SHEETS (SDSs)
 - CHEMICAL INVENTORIES
- UNIVERSITY OF NEW ENGLAND CHEMICAL HYGIENE PLAN
 - SCOPE AND APPLICATION
 - RESPONSIBILITY
 - EXPOSURE LIMITS
- EMPLOYEE INFORMATION AND TRAINING
 - Information
 - Training
 - Documentation
 - Basic Lab Safety Awareness Training from EH&S
- MEDICAL CONSULTATIONS AND EXAMINATIONS
- HAZARD IDENTIFICATION
- CHEMICALS DEVELOPED IN THE LABORATORY
- USE OF RESPIRATORS
- STANDARD OPERATING PROCEDURES
- CONTROL MEASURES
- PROTECTIVE EQUIPMENT
- SPECIAL HAZARDS
- AVAILABILITY
- ANNUAL REVIEW
- SAMPLE SDS

Chemical Hygiene Plan contents continued

PART II: HAZARDOUS MATERIALS SAFE HANDLING INFORMATION

- SAFE HANDLING OF CHEMICALS
- GENERAL SAFETY GUIDELINES
- ENGINEERING CONTROLS
 - Ventilation Controls
 - Proper Use of Ventilation Systems
- ADMINISTRATIVE CONTROLS
 - Restricted Access Areas
- PERSONAL PROTECTIVE EQUIPMENT
 - General Considerations
 - Hazards Assessments
 - Protection against Inhalation Hazards
 - Protection of Skin and Body
- CONTAMINATED CLOTHING AND PROTECTIVE EQUIPMENT
- CHEMICAL STORAGE
- MODEL WRITTEN SOPs: SPECIAL PRECAUTIONS
 - PHYSICAL HAZARDS
 - Flammables and Combustibles
 - Corrosives
 - Oxidizers
 - Water-Reactive Materials
 - Pyrophoric Materials
 - Peroxidizables
 - Light-Sensitive Materials
 - Shock-Sensitive or Explosive Materials
 - Compressed Gases
 - Cryogenics
 - HEALTH HAZARDS
 - Allergens
 - Embryotoxins and Reproductive Toxins
 - Chemicals of Moderate Chronic or High Acute Toxicity
 - Chemicals of High Chronic Toxicity
 - Animal Work with Chemicals of High Chronic Toxicity
 - BIOLOGICAL HAZARDS
 - RADIOACTIVE MATERIAL HAZARDS
 - IONIZING AND NON-IONIZING RADIATION HAZARDS
 - TRANSPORTATION OF HAZARDOUS MATERIALS
 - TRANSPORTATION OVER THE ROAD
 - TRANSPORTATION INSIDE BUILDINGS AND BY FOOT
 - WASTE DISPOSAL
 - EMERGENCY RESPONSE
 - BASIC STEPS FOR EMERGENCY RESPONSE
 - PLAN A, HIGH HAZARD EMERGENCIES
 - PLAN B, LOW HAZARD EMERGENCIES
 - FIRE AND FIRE-RELATED EMERGENCIES
 - MERCURY SPILLS
 - INJURY AND ILLNESS

- APPENDIX A: UNE University-wide Safety Committee Charter
- APPENDIX B: Incompatible Chemicals
- APPENDIX C: Peroxidizables
- APPENDIX D: Shock-Sensitive Materials
- APPENDIX E: Industrial Toxicology Overview
- APPENDIX F: Chemicals Requiring Designated Areas
- APPENDIX G: Chemical Resistance Examples
- APPENDIX H: Glossary
- APPENDIX I: Door Information Poster Template
- APPENDIX J: Additional Chemical Safety References

Hazard Communication

What is the hazard communication standard?

What do I need to know as a CHO about HazCom?

A chemical is a **physical hazard** if there is scientifically valid evidence that it is a:

- flammable
- a combustible liquid
- a compressed gas
- an explosive
- an organic peroxide an oxidizer
- pyrophoric
- unstable material (reactive)
- water-reactive



Health Hazards

A chemical is a **health hazard** if there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees.

Included are:

- carcinogens
- irritants
- teratogens (reproductive toxins)
- corrosives
- sensitizers
- radioactive material
- neurotoxins (nerve)
- biohazards
- hepatotoxins (liver)
- nephrotoxins (kidney)
- agents that act on the hematopoietic system (blood)
- agents that damage the lungs, skin, eyes, or mucous membranes
- use of prescription drugs and narcotics



Hazardous chemicals

- In most cases, the label will indicate if the chemical is hazardous. Look for key words like **caution, hazardous, toxic, dangerous, corrosive, irritant, carcinogen**, etc. Old containers of hazardous chemicals (*i.e.*, before 1985) may not contain hazard warnings.
- If you are not sure a chemical you are using is hazardous, review the **Safety Data Sheet (SDS)** or contact your supervisor, instructor, or the Department of Environmental Health & Safety (EHS).
- **Designated areas** must be established and posted for work with certain chemicals and mixtures (**Appendix G**), which include **select carcinogens, teratogens**, and/or substances which have a **high degree of acute toxicity**. A designated area may be the entire laboratory, an area of a laboratory or a device such as a laboratory hood. Designated area stickers are available from EHS.



Safety Data Sheets (SDSs)

- A Safety Data Sheet (SDS) is a document containing chemical hazard and safe handling information prepared in accordance with the OSHA Hazard Communication Standard.
- Chemical manufacturers and distributors must provide a SDS the first time a hazardous chemical/product is shipped to a facility. Many manufacturers and distributors consider University of New England the facility.
- Each Laboratory must obtain and maintain a current SDS for every hazardous chemical in their laboratory inventory.
- In the Facilities Management Building document room, is a central repository for SDSs. If you want to review an SDS, contact your supervisor, instructor, or EHS. If you need an SDS for your work area file, contact the chemical supplier or EHS.

SDS contents

- **Section 1, Identification** includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.
- **Section 2, Hazard(s) identification** includes all hazards regarding the chemical; required label elements.
- **Section 3, Composition/information on ingredients** includes information on chemical ingredients; trade secret claims.
- **Section 4, First-aid measures** includes important symptoms/ effects, acute, delayed; required treatment.
- **Section 5, Fire-fighting measures** lists suitable extinguishing techniques, equipment; chemical hazards from fire.
- **Section 6, Accidental release measures** lists emergency procedures; protective equipment; proper methods of containment and cleanup.
- **Section 7, Handling and storage** lists precautions for safe handling and storage, including incompatibilities.
- **Section 8, Exposure controls/personal protection** lists OSHA's Permissible Exposure Limits (PELs); ACGIH Threshold Limit Values (TLVs); and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the SDS where available as well as appropriate engineering controls; personal protective equipment (PPE).
- **Section 9, Physical and chemical properties** lists the chemical's characteristics.
- **Section 10, Stability and reactivity** lists chemical stability and possibility of hazardous reactions.
- **Section 11, Toxicological information** includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.
- Section 12, Ecological information*
- Section 13, Disposal considerations*
- Section 14, Transport information*
- Section 15, Regulatory information*
- **Section 16, Other information**, includes the date of preparation or last revision.

*Note: Since other Agencies regulate this information, OSHA will not be enforcing Sections 12 through 15(29 CFR 1910.1200(g)(2)).

All chemicals used by UNE personnel will be labeled. The manufacturer's labels will contain the following information:

- Identity of the chemical: trade name and composition.
- Appropriate hazard warnings, including acute and chronic hazards.
- Name and address of the chemical manufacturer, importer, or other responsible party.

○ **Secondary Containers:**

- All hazardous materials and chemicals contained in secondary containers or with damaged/missing labels shall be labeled appropriately with:
 - an extra copy of the original manufacturer's label
- OR
- **a label that identifies the chemical, and lists the appropriate hazard warning.**
- Questions about proper labeling requirements should be addressed to your supervisor or EHS.

GHS Labels



Oxidizers - Can burn without air, or can intensify fire in combustible materials.



Explosives - May explode if exposed to fire, heat, shock, friction.



Corrosives - May cause skin burns and permanent eye damage.



Gases Under Pressure - Gas released may be very cold. Gas container may explode if heated.



Flammable if exposed to ignition sources, sparks, heat. Some substances may give off flammable gases.



Toxic to aquatic organisms and may cause long lasting effects in the environment.



Toxic material which may cause life threatening effects even in small amounts and with short exposure.



May cause serious and prolonged health effects on short or long term exposure.



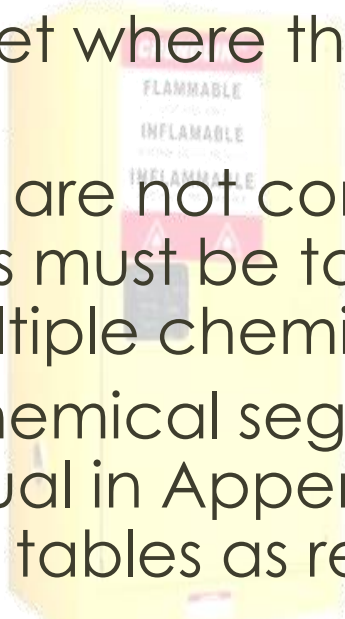
Irritant - May cause irritation (redness, rash) or less serious toxicity

Chemical Storage

Where are the proper chemical storage locations on campus?
How do I know what is compatible?

Chemical Storage

- Each lab has a flammable cabinet where they can store their flammable items and usually a lined acid cabinet where they can store their acids.
- Some chemicals are not compatible to be stored together and this must be taken into consideration when storing multiple chemicals together.
- There are two chemical segregation tables in the UNE Safety Manual in Appendix R and Appendix S. Please use these tables as reference.
- UNE chemical storage rooms use the Flinn Storage system, this can be referenced in Appendix W of the UNE Safety Manual.



CLASS OF CHEMICALS	CHEMICAL EXAMPLES	RECOMMENDED STORAGE METHOD	INCOMPATIBLES SEE SDS IN ALL CASES	PROPERTIES
Compressed Gases -Flammable	Methane, Acetylene, Propane	Store in a cool, dry area, away from oxidizing gases. Securely strap or chain cylinders to a wall or bench top.	Oxidizing and toxic compressed gases, oxidizing solids.	Since gas inside is stored at high pressure the cylinder can become a missile if valve is broken. Most are heavier than air and may collect in low areas without proper ventilation.
Compressed Gases -Oxidizing	Oxygen, Chlorine, Bromine	Store in a cool, dry area, away from flammable gases and liquids. Securely strap or chain cylinders to a wall or bench top.	Flammable gases.	React violently and rapidly with combustible materials.
Compressed Gases -Poisonous	Carbon monoxide, Hydrogen sulfide	Store in a cool, dry area, away from flammable gases and liquids. Securely strap or chain cylinders to wall or bench top.	Flammable and/or oxidizing gases.	Gas at 20°C or less, and known to be toxic and hazardous.
Corrosives – Acids INORGANIC	Inorganic (mineral) acids – Hydrochloric acid, Sulfuric acid, Chromic acid, Nitric acid, Phosphoric acid, Perchloric acid	Store in a separate, lined/protected acid storage cabinet. *DO NOT store acids on metal shelves*	Flammable liquids, flammable solids, bases and oxidizers. Organic acids.	pH ≤ 2 burns eyes and skin.
Corrosives – Acids ORGANIC	Organic acids – Acetic acid, Trichloroacetic acid, Formic acid, Acetic Anhydride	Store in a separate, lined/protected acid storage cabinet. *DO NOT store acids on metal shelves*	Flammable liquids, flammable solids, bases, and oxidizers. Inorganic acids.	pH ≤ 2 burns eyes and skin.
Corrosives - Bases	Ammonium hydroxide, Potassium hydroxide, Sodium hydroxide	Store in separate storage cabinet.	Flammable liquids, oxidizers, poisons, and acids.	pH ≥ 12.5 burns eyes and skin.

CLASS OF CHEMICALS	CHEMICAL EXAMPLES	RECOMMENDED STORAGE METHOD	INCOMPATIBLES SEE SDS IN ALL CASES	PROPERTIES
Flammable Liquids And Combustible Liquids	<p><u>All Acohols</u>: butanol, ethanol, methanol, isopropanol, etc.</p> <p>Acetone, Acetaldehyde, Acetonitrile, benzene cyclohexane, diethyl ether, dioxane, ethyl Acetate, hexane, hydrazine, pyridine, all silanes, tetrahydrofuran, toluene, xylene.</p>	<p>Store in a flammable storage cabinet. *Peroxide forming chemicals must be dated upon opening e.g. Ether Tetrahydrofuran*</p> <p>No cardboard shipping boxes in cabinet.</p> <p>Never store in cold rooms or refrigerators (unless refrigerator is explosion proof)</p>	Acids, bases, oxidizers, and poisons.	<p>Flammable liquids have a flashpoint (FP) below 100°F (38°C).</p> <p>Flashpoint is the lowest temperature at which a liquid gives off enough vapor to ignite.</p> <p>Combustible liquids have a flash point about 100°F and below 140°F</p>
Flammable Solids	White or red phosphorus, Carbon, Charcoal, metal powders.	Store in a separate dry cool area away from oxidizers, corrosives.	Acids, bases, oxidizers, and poisons.	<p>Class I explosives when dry sufficiently wetted with water or alcohol explosive properties suppressed. (Picric Acid)</p> <p>Fine dust that can form explosive mixtures with air or explosion hazard when heated. (Metal powders) Pyrophoric (white phosphorus) Can be ignited by friction.</p>
Water Reactive Chemicals	Sodium metal, Potassium metal, Lithium metal, Lithium Aluminum hydride	Store in a dry, cool location. Protect from water and the fire sprinkler system, if applicable. Label location – WATER REACTIVE CHEMICALS	Separate from all aqueous solutions, and oxidizers.	Reacts with water to produce highly flammable hydrogen gas.
Oxidizers	Sodium hypochlorite, Benzoyl peroxide, Potassium permanganate, Potassium chlorate, Potassium dichromate. The following are generally considered oxidizing substances: Peroxides, Perchlorates, Chlorates,	Store in a spill tray inside a non-combustible cabinet, separate from flammable, combustible materials, and all organic materials.	Separate from reducing agents, flammables, and combustibles and organic materials.	Oxidizers are generally not combustible, but they may cause or contribute to combustion by yielding oxygen when in contact with flammable material or strong reducing agents.

CLASS OF CHEMICALS	CHEMICAL EXAMPLES	RECOMMENDED STORAGE METHOD	INCOMPATIBLES SEE SDS IN ALL CASES	PROPERTIES
Poisons/Toxic	Cyanides, heavy metal compounds, i.e. Cadmium, Mercury, Osmium	Store separately in a vented, cool, dry area in chemically resistant secondary containers.	Flammable liquids, acids, bases, and oxidizers.	Cyanides and sulfides will produce poisonous hydrogen cyanide or hydrogen sulfide gas when in contact with acids.
Volatile and Non-Volatile Toxic Liquids	<p><u>Volatile toxics</u> Carbon, tetrachloride, chloroform, dimethyl sulfate, halothane, mercaptoethanol, methylene, chloride (dichloromethane), phenol.</p> <p><u>Non-volatile toxics</u> Acrylamide solutions, ethidium bromide, triethanolamine.</p>	<p>Ok to store with flammables.</p> <p>Alternative: Any enclosed cabinet or shelf to protect from accidental breakage.</p>	Bases, water reactives	<p>Chronic exposure is a health hazard. Avoid inhalation and skin contact.</p> <p>Many toxic solvents are highly volatile.</p> <p>Non-flammable (some are combustible)</p>
General Chemicals -Non-Reactive	Agar, Sodium Chloride, Sodium bicarbonate, and most non-reactive salts	Store on general laboratory benches or shelving.	See SDS	

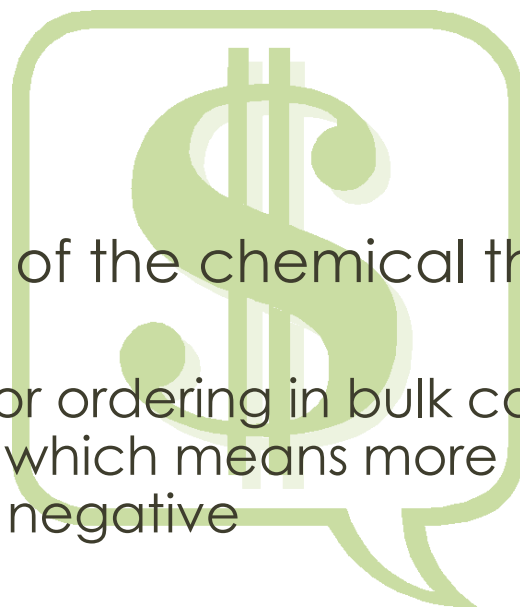
Chemical ordering

What do I need to know when ordering chemicals?

What are the delivery procedures?

Purchasing chemicals

- Quantity:
 - Please purchase only the amount of the chemical that is needed.
 - Ordering too much of a chemical or ordering in bulk can mean more hazardous waste later which means more money spent by the University and negative environmental impacts.
 - Please find storage space for the chemicals before purchasing them.
 - If there is no storage space for the chemicals being ordered then you have PI's storing chemicals in areas that are not under their control which can cause many problems.
 - Also, chemical segregation becomes a problem when people are looking for storage location alternatives.



Purchasing chemicals



- Safety concerns:
 - Please make sure you are buying all chemicals from a reputable vendor with the appropriate DOT packaging and shipping protocols.
 - An SDS for the chemical being ordered must be made available and filed in your department and with EHS.
 - When ordering chemicals, clearly state the PI's name or building/room location on the package label information so the shipping/receiving department knows exactly who it belongs to.
 - **NEVER** store chemicals in hallways, office areas, or common areas.

Chemical receiving

- EHS has worked with Facilities to ensure a safe chemical receiving system.
- All chemicals are now delivered to a central location in each lab building and distributed to individual users from that point. Frozen and refrigerated items will be kept at the dock in their fridge until delivery.
 - Users will receive an email from the mailroom when their shipment has arrived.
- Delivery locations:
 - Pickus 219 – flammable cabinet
 - Stella Maris – Room 303
 - Morgane – Prep room 211
 - Marine Science Center – Room 117
 - Alfond – Chemical Storage room 333



Hazardous Waste

What is hazardous waste?

What rules and regulations need to be followed for hazardous waste accumulation and disposal?

Hazardous Waste Management

- The University of New England generates numerous hazardous wastes as a result of teaching and research laboratory work, maintenance, and other activities.
- This section relates to the generation and storage of all hazardous wastes as carried out under the UNE Hazardous Waste Management Plan. Under this plan, procedures for accumulation, storage, and disposal of hazardous waste at all UNE facilities are established.
- These procedures are consistent with the requirements of the Maine Department of Environmental Protection, Chapter 851 "Hazardous Waste Management Rules."



Characteristics of hazardous waste

With the assistance of EHS, each department will determine if a known waste is hazardous. A waste is a hazardous waste if:

- It is a listed hazardous waste by the EPA.
- It is a mixture of a non-hazardous waste and a listed hazardous waste.
- It exhibits any of the following characteristics of hazardous waste, as defined by the State of Maine Hazardous Waste Management Rules:

- **Ignitable**
- **Corrosive**
- **Reactive**
- **Toxic**



Waste Minimization

All activities which generate hazardous waste covered under this program will be conducted in a manner to minimize unnecessary generation of such hazardous wastes. Any minimization efforts made by departments will be documented and presented to the Environmental Health and Safety Specialist.



Hazardous Waste Container Requirements:

- In good condition: no leaks, excessive rust, dents, or bulges.
- Closed when not in use.
- Identified with the hazardous waste label provided by EHS (no abbreviations or formulas).
- If containing a liquid, stored in a secondary containment, this containment must be 110% the volume of the largest container or 20% of the total, whichever is greater.

Large Quantity Generators

- The UNE Biddeford Campus is a Large Quantity Generator of Hazardous Waste (LQG)
- This means that it must ship its waste within 90 days of first adding waste to a container.
- When a waste container becomes full you must contact EHS for pick-up.
- Once you have added the date to the container and EHS has been contacted, it must be moved to the MAA within a 3 day time period.
- There is an exemption to this regulation which allows Large Quantity Generators to start 90 day clock when the container is full if the hazardous waste is generated at a Satellite Accumulation Area (SAA).



Satellite Accumulation Areas (SAAs) in Biddeford only

Each laboratory/studio/work area that generates hazardous waste will designate a location **WHERE THE WASTE IS GENERATED** and **UNDER THE CONTROL OF THE OPERATOR** in which the wastes will be stored.

SAA requirements are:

- Located inside of a building or enclosure to provide protection from the weather.
- Located on a solid, impermeable surface such as cement, asphalt, or wood that has been treated with water proof sealer or other approved method.
- Large enough to allow for three feet of aisle space around hazardous waste containers unless otherwise specified.
- Identified with the words "Hazardous Waste, Satellite Accumulation Area".
- Adequately lit to enable personnel to read warnings and markings.
- Equipped with a spill kit located adjacent to the SAA. This spill kit will contain material appropriate to clean up hazardous waste stored.
- Have a fire extinguisher readily available.
- Have an eye wash/shower station readily available.
- Restricted from unauthorized personnel access by being locked at all times when authorized personnel are not present when possible.

SAA Management (Biddeford only):

- Each Satellite Accumulation Area will designate a person that will:
 - Inspect the SAA **weekly** using the SAA inspection sheet. The completed inspection sheets will be kept on file for a minimum of one year.
 - Completed forms **MUST** be forwarded to the Environmental Health and Safety Specialist at the end of each calendar year for record keeping purposes.
- An entry is required for each week (**once every seven days**). If there wasn't an inspection for a certain week, a reason why must be stated on the inspection log.
 - For example if there was a UNE snow day or if the person was sick, it must be noted on the log.
 - ****The ME DEP may still fine UNE for this as a violation even if the missed inspection is noted****
- If the designated individual will be absent, they must designate a trained individual to do the inspections or close the SAA prior to their absence.

SAA Inspection Items:

Inspection is required once every 7 days.

INSPECTION CRITERIA

- a) All containers are labeled with “Hazardous Waste” and the following information is written and visible on the label:
 - Description of waste (No formulas or abbreviations)
 - Date container becomes full.
- b) All containers are closed.
- c) No containers are leaking, bulging, rusting, or otherwise damaged.
- d) Containers are compatible with the wastes that are stored in them.
- e) Incompatible wastes are segregated.
- f) All Containers are stored in secondary containment and on a firm working surface.
- g) SAA must be located at the point of generation.
- h) SAA must be under the control of an operator
- i) Inspections must be completed weekly
- j) All full containers must be moved to the Main Accumulation Area within 72 hours.

Small Quantity Generators

- The Portland Campus is a Small Quantity Generator (SQG),
- This means that it has 180 days from the time a container becomes full to ship its hazardous waste.
- The container management in Portland is similar to Biddeford with the following exceptions:
 - Any outlying areas of Hazardous Waste Generation are to be labeled as Waste Accumulation Areas (WAA). The Satellite Accumulation Area exemption only applies to LQG's.
 - SQG's are not required to document inspections.
 - Date waste generation begins must be on container in addition to the date container becomes full.

Labeling

- Prior to putting hazardous waste into a container mark the container with a hazardous waste label, with following information:
 - Contents (chemical name, not trade name, **no abbreviations**)
 - Hazard associated with the waste (recommended but not required).
- ***NOTE:** DO NOT write the date on the container in an SAA until the container is full and ready for pick up by EHS*

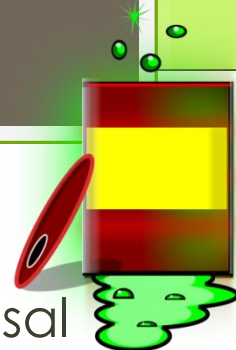
HAZARDOUS WASTE
CONTENTS: (No Formulas or Abbreviations)

DATE CONTAINER WHEN FULL OR READY FOR PICKUP* _____
*Reminder: Leave room for head space

Main Accumulation Area (MAA)

- The EHS Specialist is responsible for weekly inspections of the MAA. The completed inspections will be kept on file for a minimum of one year.
- Prior to moving hazardous waste from an SAA into the MAA, the container will be marked with a hazardous waste label, with following information:
 - Contents (chemical name, not trade name, no abbreviations)
 - Hazard associated with the waste (recommended but not required)
 - Date the waste container is being moved to the MAA.
- Maintain a 36" aisle space around the hazardous waste bulk containers unless otherwise specified.
- Keep all non-hazardous waste out of the MAA when possible.
- Maintain a spill kit (replenish supplies after use).
- Ensure that all containers are closed, except when adding Hazardous Waste.
- Segregate incompatible wastes.
- Provide technical assistance to disposal companies.
- No wastes will be stored beyond 90 days following the fill or accumulation date placed on the "Hazardous Waste" label.

Off-Campus Hazardous Waste Disposal:



- The EHS Specialist will contact the transportation/disposal contractor to arrange pick-up and disposal of wastes.
- The EHS Specialist will use the waste profile sheet to inventory the shipment of the hazardous waste through the disposal contractor.
- The contractor will be responsible for packing, labeling and shipping all wastes. The contractor will also prepare appropriate hazardous waste manifests and Land Disposal Restriction Form or "Land Ban" forms for a UNE representative signature.
- The EHS Specialist will inspect all manifests for accuracy and ensure that the transportation vehicle is properly placarded before leaving the premises.
- Hazardous waste disposal costs run about \$38,000-\$50,000 per year at UNE! That is why waste minimization is important.

Off-Campus Hazardous Waste Disposal continued...



- Appropriate copies of the manifest will be forwarded to the origin and destination state, and retained for a period not less than three years. The disposal contractor will be notified by telephone if the Treatment, Storage, and Disposal Facility copy of the manifest is not returned to EHS within 30 days from disposal.
 - If copy #3 is not received within 35 days, the DEP will be notified. If Copy #3 is not received within 45 days of shipment then a written exception report will be sent to the DEP with the following information: a copy of the manifest and a letter describing the efforts taken to obtain the copy.
- Analytical costs for determining unknown wastes will be the responsibility of the department generating the waste.

Empty containers:

- Containers that held a hazardous waste or a hazardous material may be disposed of regular trash provided that:
 - The contents have been removed to the maximum extent possible and leaving no more than 1 inch of residue and contain no free liquids.
 - **SPECIAL NOTE:** Evaporation of solvents is not permitted and is considered “waste treatment” which UNE is not authorized to do. You may only vent “RCRA empty” containers with residual product in them.
 - For acute hazardous wastes (40 CFR 261.33(e) for P-listed waste regulations) the container must be completely emptied and triple rinsed to remove residual liquid and vapor. The rinse water will be contained and prepared for disposal as hazardous waste.
 - Hazardous material warnings are removed.
 - The lid or bung has been removed.
 - Empty compressed gas cylinders will be returned to the vendor or owner for re-use or disposal whenever possible.

Hazardous Waste Spills

- In the event of a hazardous waste spill, the following steps will be taken.
 1. Warn others in the area.
 2. Isolate the area.
 3. If fumes are present, evacuate the area.
 4. Notify the Waste Water Treatment Plant (ext: 2191) if the spill has or has the potential to escape down a drain. If the treatment plant is not available, notify Biddeford Campus Facilities Management (ext. 2368) or Portland Campus Facilities (ext. 4392).
 5. Notify EHS (ext. 2488) or Security (ext. 366) if off hour or weekend.





Training and Recordkeeping

All personnel associated with the control of hazardous waste will be trained annually.

- Record Keeping:

1. Training records will be maintained by the Department of Human Resources for a minimum of 3 years.
2. Hazardous Waste manifests will be kept by EHS for a minimum of 3 years.
3. Hazardous Waste inspection records will be maintained for a minimum of one year.
4. SAA inspection logs **MUST** be forwarded to EHS when completed for record keeping.

Lab Safety Training

What lab safety training are employees required to have?

What lab safety training are students required to have?

Student Training

- Administered through individual College
- Different formats/methods depending on the College
- Contact College CHO
- For students taking credit courses at UNE who are not UNE employees



Employee Training

- Administered through Human Resources
- Online format through Blackboard modules
- Contact Tammy Louko in HR
- For anyone employed by the University or working a lab that is not part of a course
 - (work study, internships, employee/faculty/staff—paid or unpaid)

Core & Lab Safety through HR

- Code of Conduct
- Ergonomic Awareness
- Fire Safety
- FERPA
- Red Flag
- Sexual Harassment
- Title IX
- Laboratory Safety
- Hazardous Communication
- Hazardous Waste
- Personnel Protective Equipment
- Formaldehyde Awareness
- Blood borne Pathogens
- Radiation safety

Group Training Request

prn	Last Name	First Name	MI	Email Address	Employment Status	Department Name	Job Begin Date	Job Title	Core Training	Other Training	Other Training	Other Training	Supervisor
910111111	Louko	Tammy		tlouko@une.edu	AD	Human Resour	1/1/2015	EXAMPLE	Core Laboratory Training	Blood Borne Pathogens			Ed Doyle
									Core Laboratory Training				
									Core Laboratory Training				
									Core Laboratory Training				
									Core Laboratory Training				
									Core Laboratory Training				

Definitions

Employment Status Codes

AD	Full Time Salaried
SF	Full Time Hourly
AH	Half Time Salaried
SH	Half Time Houly
Faculty	Faucly 9, 10, 11 or 12 month
FA	Adjunct Faculty
TM	Part Time/Temp Salaried
TP	Part-Time/Temp Hourly
Student Paid	
Student Unpaid	
Graduate Assistant	
Volunteer	

Core Training Groups

Core Training	Code of Conduct, Ergonomic Awareness, Fire Safety, FERPA, Red Flag, Sexual Harrassment, Title IX
Core Laboratory Training	Core Training plus Laboratory Safety,Hazardous Communication, Hazardous Waste, Personnel Protective Equipment
Core Facilities Training	Core Training plus Blood Borne Pathogens, Hazardous Communication,Personal Protective Equipment, Lockout/Tagout,
Core Housekeeping	Core Training plus Blood Borne Pathogens,Hazardous Communication, Personal Protective Equipment

Other Training Options

N/A
Code of Conduct
Ergonomic Awareness
FERPA
Fire Safety
Red Flag
Sexual Harassment Prevention
Title IX
Blood Borne Pathogens
Formaldehyde
Laboratory Safety
Hazardous Communication
Hazardous Waste
Personal Protective Equipment
Radiation Safety
Lockout/Tagout
Oil Spill Prevention
Universal Waste

Topics covered in student lab safety training:

- General Safety Rules
- Lab dress code
- Housekeeping
- Cell phone use
- Hazard Communication
 - Chemical labeling
 - Safety Data Sheets
- Chemical Safety
 - Hazard types
 - Routes of Entry
- Personal Protective Equipment (PPE)
 - Selection and use
- Safety Equipment
 - Fire extinguishers
 - First Aid Kits
 - Spill kits
 - Eyewash stations/safety showers
 - Broken Glass boxes
 - Sharps containers

Lab Housekeeping

Keeping the physical lab spaces in control.

Lab Housekeeping

As in many general safety procedures, the following list of good housekeeping practices indicates common sense activities which should be implemented as a matter of course in the laboratory. These recommendations are designed for accident prevention.

1. The area must be kept neat and clean at all times.
2. Each laboratory employee and student will be responsible for maintaining the cleanliness of his/her area.
3. Reagents and equipment items should be returned to their proper place after use. This also applies to samples in process.
4. Contaminated or dirty glassware should be placed in specific cleaning areas and *not allowed to accumulate*.
5. Reagents, solutions, glassware, or other apparatus will not be stored in hoods. Such storage reduces the available work space and interferes with the proper air flow pattern, thereby reducing the effectiveness of the hood as a safety device.
6. Counter tops should be kept neat and clean. Bench tops and fume hoods should not be used for long-term chemical storage.
7. Stored items, equipment, and glass tubing will not project beyond the front of shelf or counter limits.

8. Stored items or equipment will not block access to the fire extinguisher(s), safety equipment, or other emergency items.
9. Stairways, hallways, passageways/aisles and access to emergency equipment and/or exits must be kept clear and not be obstructed in any fashion, including storage, equipment, phone or other wiring.
10. No combustible material such as paper, wooden boxes, pallets, etc., will be stored under stairwells or in hallways. Hallways will be kept free of boxes and materials so that exits or normal paths of travel will not be blocked.
11. Materials stored near aisles will be restrained to prevent their falling.
12. All containers must be dated and labeled with at least the identity of the contents and the hazards those chemicals present to users .
13. No material will be stored upon or hung from suspended ceilings. No ceiling tiles shall be removed.



Any piece of laboratory equipment that is not functioning properly or poses a safety or health risk will be tagged :

OUT OF SERVICE

immediately by the person who discovers the issue.

The individual should then put in a Facilities work order, call the vendor for service, or send the equipment out for off-site repair.

Example) A fume hood is in alarm and does not have any air flow.

Put a sign on the fume hood immediately and put in a request for service

Poor Housekeeping



Poor Housekeeping



Unfortunately these are all areas in UNE labs!!



The EHS lab inspection process

What is involved in the EHS lab inspection process?

What is EHS looking for during the inspections?

When do lab inspections occur?

- **Routine semi-annual:** EHS conducts an inspection in every lab once in the Fall semester and once in the Spring semester.
- **Employee complaint:** If there is a safety complaint from a UNE employee, EHS may launch a lab inspection for that lab.
- **Follow Up:** EHS may conduct a follow up lab inspection if a lab is having difficulties being compliant.



EHS Lab Inspection Process:

- EHS emails the PI contact for the lab to schedule an inspection date/time.
- If EHS does not hear from the PI, 1 second email is sent to schedule an appointment.
- If after 2 emails, EHS has not scheduled an appointment, EHS will come on the date/time specified in the email.
- EHS will arrive at the scheduled date/time with an inspection checklist.
- EHS will go through the inspection checklist with the PI and may ask several questions.
- EHS may offer suggestions and offer resources to help the lab achieve compliance.

EHS Lab Inspection Process:

- The EHS Lab Inspection form can be found in Appendix Q of the UNE Safety Manual if you would like to prepare in advance.
- After the inspection is complete, EHS will write up an EHS Lab Inspection Report which will be emailed to the PI, the Department Chair, and possibly the Dean (depending on the college).
- The report will tell you things that your lab will need to do to become compliant and things that EHS will do to help you become compliant.
****EHS does this to assist UNE achieve compliance and maintain safety, health, and regulatory compliance. No one is going to “get in trouble”, we are here to HELP****



EHS Lab Chatter Newsletter

-A publication dedicated to safety and health in
UNE laboratories.



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Welcome back to the lab!

By Jessica Tyre

Welcome back lab staff and students! We hope you had a very safe and enjoyable summer. Now that the Fall 2015 semester is upon us, we are delighted to begin distribution of the EHS Lab Chatter publication once again. We are dedicated to bringing lab safety and health issues to the UNE faculty, staff, and student's attention and make sure everyone leaves the lab in the condition in which they arrived. Please make sure to read through the entire newsletter as there are many items that may pertain to your lab space, or there may be new rules and regulations that have come along.

As always, we encourage lab staff and students to write and contribute articles pertaining to lab safety and health issues so that this can be a collaborative effort. Even if you just have an idea for an EHS Lab Chatter topic, but you need the EHS staff to do the research and write an article, we welcome that and would be happy to cover whatever topics you feel are pertinent. Have a safe Fall 2015 semester!

Hazardous waste SAA compliance audits

The UNE Environmental Health and Safety Department will be conducting unannounced hazardous waste satellite accumulation area (SAA) audits on the Biddeford campus in the month of September to ensure compliance of all state and federal regulations is achieved.

EHS will be checking for:

- ▶ appropriate container labeling
- ▶ integrity of storage containers/closed lids
- ▶ completion of weekly inspection logs
- ▶ full containers have been removed from SAA

****The results will be reported to the appropriate members of administration. ****

HAZARDOUS WASTE	
Contents: (No Formulae or Abbreviations)	

HAZARDS (circle all that apply)	
<input type="checkbox"/> IRRITANT	<input type="checkbox"/> TOXIC
<input type="checkbox"/> CORROSIVE	<input type="checkbox"/> REACTIVE
<input type="checkbox"/> FLAMMABLE	<input type="checkbox"/> OTHER _____
DATE CONTAINER WHEN FULL OR READY FOR PICKUP	
____/____/____	BLD. _____ DEPT. _____ RM. _____
MANAGER: _____ TEL. _____	

- ❖ Communicates safety and health issues from EHS to lab staff
- ❖ Allows lab staff and other UNE departments to contribute articles and information to the UNE lab community.
- ❖ Encourages a safety culture in the UNE lab community.
- ❖ Alerts employees to new policies and regulations related to their job.



UNE Chemical Sharing Program

- Labs that have “leftover” chemicals or commonly used chemicals they are no longer going to need can list the chemicals in EHS Lab Chatter to see if another department can use them.
 - Reduces hazardous waste costs
 - Reduces environmental impact of hazardous waste
 - Reduces costs for UNE labs
 - Lab equipment can also be listed if there is something your lab was thinking about discarding, like a pricey piece of equipment!



University Wide Safety Committee (UWSC)

University Wide Safety Committee

- Per the UNE Safety Manual:

“The University Wide Safety Committee (UWSC) is a presidential appointed committee of the University of New England, charged with acting as an advisory body to the administration and the Environmental Health and Safety Office on matters of biological, chemical, radiological, and personal safety.”

- “The UWSC exists to assure that explicit standards of safety are established; that the University performance is measured against those standards, and that action plans with goals and timetables, be established to remedy identified deficiencies.”

University Wide Safety Committee

The UWSC is functionally charged to:

- a. Encourage all employees to share in accident prevention and safety practice.
- b. Advise Environmental Health and Safety Office of unsafe conditions and practices and assist in corrective actions taken.
- c. Review existing and proposed safety policies and procedures and recommend their adoption to the administration.
- d. Follow up to assure that adopted policies and procedures are disseminated to and understood by all employees.

Membership

The Director of EHS will chair the committee. All other members are appointed, on the recommendations of department heads, by the president at the beginning of each academic year. The areas of the academic community that are represented through the appointment of individuals representing each area are:

Biddeford Campus

- a. College of Arts and Sciences- represented by Chemical Hygiene Officer (CHO)
- b. College of Osteopathic Medicine - represented by CHO
- c. Marine Science Center—represented by CHO
- d. Sodexo Dining Services
- e. Research Integrity
- f. Environmental Health and Safety Specialists and Sustainability Coordinator
- g. Director of the Environmental, Health and Safety Department (Chair)
- h. Radiation Safety Officer
- i. Facilities Management
- j. Student Affairs
 - 1) Campus Center
 - 2) Safety and Security
 - 3) Housing/Commuter Life
- k. Department of Human Resources
- l. Facilities Management

Portland Campus:

- a. Facilities Management
- b. College of Pharmacy—represented by CHO
- c. College of Dental Medicine—represented by CHO
- d. College of Dental Hygiene—represented by CHO
- e. UNE Compliance Officer

Lab Safety Sub Committee

Lab Safety Sub-Committee

- Started in March 2014 when there were many specialized safety issues having to do with labs presented at the University Wide Safety Committee meetings.
- This sub committee focuses specifically on lab safety issues in student teaching labs and research labs.
- Chemical Hygiene Officers and lab staff gather with EHS to discuss issues and update each other on issues and solutions.
- Meets on a monthly basis year round.
- Talk about new policies and needs for lab safety.



College of Pharmacy Safety Committee

College of Pharmacy Safety Committee

- Standing Charges are as follows:
 - Ensure that the College of Pharmacy adheres to OSHA requirements and that policies are consistent with the University
 - Monitor laboratory adherence with safety standards.

2015-2016 Charges:

- Work with the University HR department to promote a healthy workplace.
- Develop a process to recognize faculty or staff members who help to promote a healthy workplace in the College of Pharmacy
- Identify, implement, and develop new initiatives as needed and as appropriate per the committee's mission

Life safety equipment

- Fire suppression/evacuation
- Eye washes/safety showers
- Chemical spill kits
- First Aid kits

Fire safety equipment

- Maintained by UNE Security
- Annual fire extinguisher inspections/tags
- Labs without sprinkler heads will have fire extinguishers. ex) Stella Maris
- Pull stations and evacuation maps are in the hallways of the buildings.
- Muster points lists can be found in the Clery Report the Security puts out annually
- Fire extinguishers to be used for very small, incidental, fires only. Security can give classes on safe operation of fire extinguishers if needed.
- Remember to pull the fire alarm before attempting to extinguish the fire.



MUSTER POINTS

Biddeford Campus Evacuation Plan	
588 Pool Street	Go to Sea Star Market Parking Lot
Alfond Health Sciences Building	
*First floor door facing Campus Center	Go to sand volleyball court
*First floor exit nearest Hills Beach Road	Go to end of the brick retaining wall
*Lower level main entrance (by Alfond Café)	Go to center of large lawn.
*Main entrance and Embalming Room entrance	Go to front lawn of Stella Maris.
Alfond Forum	All exits cross Nor'Easter Way to parking lots. Do not block access road
Assisi Hall	Go to volleyball court or the lawn between Assisi and Alfond Science Bldg
Avila Hall	Go to the lawn between Avila and the Campus Center (chiller plant) or the lawn by Padua
Campus Center	
*Double doors outside Fitness Center	Go through parking lot, turn right to lawn by Hills Beach Road
*Gym exit by Equipment Room	Turn left, proceed to area between Campus Center and Avila
*Main entrance	Go to either sidewalk that runs along Alfond lawn or to Alfond lawn – DO NOT REMAIN ON THE FRONT PLAZA AREA
*Pool side doors	Go to center of lawn by Hills Beach Road
*Simard, Pettipiece and Wescott Rooms	Go to volleyball court
Champlain Hall	Go to the Freddy Hall Parking Lot -- Do not impede emergency response vehicles
Decary	
*Computer Lab, lower level	Go to lawn between Decary and Stella Maris
*Entrance closest to Residence Hall Access Rd	Go to center of lawn between Hills Beach Road and the Residence Hall Access Road
*Entrance facing Stella Maris	Go at least halfway onto lawn between Stella Maris and Decary
*Exits from Cafeteria/Kitchen	Go to either Library or Stella Maris lawn
*Main entrance	Go to the front lawn by the park bench
East Hall	Exit along the rear of the building (toward Frederick Hall). Assemble in parking area between Frederick Hall and the back parking lot of the Campus Center
Facilities Building	Service road towards Student Academic Success Center Lot
Featherman Hall	Go to parking area between Avila and Featherman Hall
Fine Arts Building	Go to the rear of the parking lot
Frederick Hall	Cross the parking lot to the lawn between Campus Center and Hills Beach Road. During winter follow sidewalk to front of Campus Center
Gregory	Go to parking lot behind Gregory

MUSTER POINTS

Biddeford Continued...	
Ketchum Library	
*Main entrance	Go to lawn between Stella Maris and Decary
*Saint Francis Garden entrance	Go to Claude Dubois Athletic Field
*Windward Café entrance	Go to the parking lot and move closer to the Waste Water Treatment plant
Student Academic Success Center	Go to the Student Academic Success Center Parking Lot
Marcil	
*First level	Go to parking lot area across from lower level entrance
*Second level	Go to lot across parking lot access road nearest Route 9
Marine Science Center	Go to the entrance to the walkway to Champlain Hall
Morgane Hall	
*First floor	Gregory Parking Lot
*Second and third floors	Go to Parking Lot #14
Padua Hall	Go the Avila Parking Lot
Petts Health Center	Go to Welcome Cottage lawn or parking lot
*Lower level	Cross Hills Beach Road and go to the Admissions Cottage lawn
*Upper level	Walk out to middle of parking lot (at least past the third parking space)
Pickus	Go to Gregory Parking Lot
Siena Hall	Go to walkway to Library
Sokokis Hall	Exit all doors, go across street to parking lot
Stella Maris	Go either to lawn in front of Stella Maris or to lawn between Decary and Stella Maris
Welcome Cottage	Go to the parking lot at Petts Health Center
West Hall	Exit along the rear of the building (toward quad), follow sidewalk leading to the quad area. Assemble on long sidewalk that points directly at the center of the quad, behind Avila

MUSTER POINTS-Portland

Portland Campus Evacuation Plan	
30 College Street	Go across College Street to the lawn area between Hersey Circle and College Street
Abplanalp Library	Lawn area between Hersey Circle and College Street
Alexander Hall	Lawn between Hersey Circle and College Street
Alumni Hall	Lawn area between Hersey Circle and College Street
Art Gallery	Go to the Proctor Hall Parking Lot
Blewett Hall	Lawn by Ludcke Hall
Coleman Hall	Lawn by Ludcke Hall
College of Pharmacy	Go to center of parking lot for Finley Recreation Center
Facilities Shop	Go to the parking lot, group near Alexander Hall
Finley Recreation Center	Center of parking lot for Finley Recreation Center
Goddard Hall	Lawn area between Hersey Circle and College Street
Hersey Hall	Lawn area between Hersey Circle and College Street
Linnell Hall	Cross College Street and group on the lawn
Ludcke Auditorium	Go to lawn between Ludcke and College Street.
McDougall/Ginn	Cross College Street and group on the lawn in front of Abplanalp Library
Parker Pavilion	Group on the lawn by Ludcke
Proctor	Lawn area between Hersey Circle and College Street

Eyewashes and Safety Showers



- Any lab containing hazardous chemical or biological materials should have an eyewash station.
- Each floor should have a safety shower or drench hose.
- Eyewash stations should be run and inspected weekly by lab staff and tags should be filled out with initials and date.
- EHS will run safety showers annually with special equipment to prevent flooding.
- Some labs have bottle eyewash stations.

Chemical spill kits

- Labs containing hazardous materials are supplied a small incidental chemical spill kit by EHS.
- Spill kits should only be used to contain small incidental spills.
- Once the spill is contained, call UNE Security and EHS for clean up and decontamination procedures.
- Spill kits contain:
 - Spill socks
 - Spill pillows
 - Absorbent
 - PPE (gloves, goggles)
 - Clear bags



First Aid Kits

- Each lab will have a small first aid kit.
- First aid kits are for small injuries not requiring medical attention.
- Please report incidents, no matter how minor, to Security and/or Human Resources.
- Please replenish supplies in first aid kits as needed (especially band aids).
- If a lab does not have a first aid kit, please contact EHS.



Emergency Procedures

What to do in the event of:

- a chemical release
- a medical emergency
- a fire emergency
- a chemical or biological exposure

Chemical Release



- **If it is a small incidental spill that is easily controlled:**

- Use your EHS-provided incidental spill kit to contain the spill.
- Cover all nearby drains
- Mark off the area
- Call Security immediately
- Pull the SDS
- EHS will respond to take the hazardous materials



- **If it is a large and hazardous spill/leak:**

- EVACUATE and call Security

Medical Emergency



- If it is matter of life or death or serious injury, call 9-1-1.
- If there is a minor injury, an injury requiring more than first aid or one that may require hospitalization, call Security immediately.
- If there is a minor cut or injury requiring first aid only, please report to Security after the injury has been attended to.

Fire Emergency

- If there is a small, controlled, incidental fire, you may try to use the fire extinguisher with your back to the door.
 - Call Security immediately even if fire is extinguished.
 - Extinguisher training available through Security.
- If the fire is large and out of control, activate a pull station (if able) and evacuate the building.



Chemical/Biological Exposure

- If someone has been exposed to a chemical or biological agent through inhalation, injection, absorption, ingestion, etc.:
 - If emergent, DIAL 9-1-1 and ALWAYS CALL SECURITY
 - Flush area with water (safety shower, eyewash, sink)
 - Seek medical attention
 - Pull SDS when able or have someone pull SDS
 - Follow up with Human Resources on post-exposure testing if biological



Accident Reporting

How do I report an accident or incident?

What do I report?

What paperwork needs to be filed?

How do I report an accident or incident?

- If there is an emergency that requires immediate attention **dial 9-1-1**.

- ALWAYS notify UNE Safety and Security at **Emergency Phone Number: x-366**

Non-emergency Phone Number: 2298

From off campus: 207-283-0176



- If the incident is less serious but needs attention such as an incidental spill, you should also call EHS, but Security should also notify EHS at 2488.



What do I report?

E-V-E-R-Y-T-H-I-N-G



Please report all injuries, chemical spills, biological exposures, illnesses, etc. related to UNE work.

Even if you think it is nothing, it could turn into something very quickly!

What paperwork do I file?



- Accident/Incident Report with Security (this will get distributed to appropriate departments, including EHS)
- Human Resources may contact you for additional paperwork if there is a work related injury or illness
- Supply Supervisor/Manager with any relevant paperwork if you have acquired any documentation for their review.



Recap: How can EHS assist me??

- Answer any safety, health, and environmental questions related to UNE activities (Policy/Procedures)
- Pickup hazardous waste and radioactive waste
- Hazardous waste labels and containers (bins and log sheets)
- Air monitoring
- Noise monitoring
- Job Hazard Assessments
- PPE recommendations
- Safety manual questions and updates
- Chemical Hygiene Plan questions and updates
- UWSC and Lab Safety Sub-Committee issues
- Spill kit supplies, first aid kits, some PPE, safety equipment



What's next in lab safety?

- Children in labs policy
- Cell phone in labs policy
- Visitors to campus labs policies
- New student orientation?
- Continuation/expansion of EHS Lab Chatter
- Lab PI Self Audits?
- More lab coat/gown programs through vendor services?



Questions???



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