

# Environmental Health and Safety Manual

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<b>SECTION 1.0</b>	<b>INTRODUCTION</b>
<p>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. 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.</p>	
<b>SECTION 1.1</b>	<b>ORGANIZATIONAL RESPONSIBILITIES</b>
<p>The cooperation of many individuals is needed in order to make the University of New England (henceforth known as the University) a safe place for its faculty, staff, and students to carry out their assigned tasks. The following section is devoted to clarifying issues of responsibility among those involved with implementing and enforcing the provisions of the Environmental Health and Safety Manual (Safety Manual) at the University. Responsibility for occupational and environmental health and safety rests at all functional levels within the University.</p>	
<p><b>1. The President</b></p> <ul style="list-style-type: none"> <li>• The university President has overall responsibility for making sure occupational and environmental health and safety Policies and Procedures are enforced and that the University complies with applicable Federal and State regulations. General oversight and responsibility for the Environmental Health and Safety Manual (Safety Manual) is delegated to the Vice Presidents, Deans, Department Chairs, etc. as specified below.</li> </ul> <p><b>2. The Vice President of Operations:</b></p> <ul style="list-style-type: none"> <li>• Hires an EHS Director that is qualified to enforce the Safety Plan on both campuses and all UHC clinics and provides supervisory guidance for the EHS Director in managing the Safety Plan.</li> <li>• Provide necessary funding as part of University wide budgeting to assure that the EHS Director is able to comply with the Safety Plan.</li> <li>• Acts as an emergency response official in the event of a crisis situation and has responsibility for the continuous operations.</li> <li>• Appoints a Radiation Safety Officer (RSO), as necessary, to meet regulations and to enforce Safety Manual policies and procedures.</li> </ul> <p><b>3. The Vice President for Fiscal Affairs/CFO</b></p> <ul style="list-style-type: none"> <li>• Responsible for bringing amendments to the Safety Manual to the University Council for approval and acts as final authority for any conflicts or disagreement regarding environmental health and safety issues after consulting with the Vice Presidents and President as necessary.</li> </ul> <p><b>4. The Vice Presidents for Academic Affairs</b></p> <ul style="list-style-type: none"> <li>• Supports Deans and Directors in enforcing any and all violations to Safety Plan.</li> </ul> <p><b>5. Dean(s)</b></p> <ul style="list-style-type: none"> <li>• Responsible for departmental implementation and compliance with the regulations contained in the Safety Plan.</li> <li>• The Dean(s) appoint a college Chemical Hygiene Officer (CHO) who is qualified to enforce Safety Manual policies and procedures, works cooperatively with the Environmental Health and Safety, Director, RSO, and</li> </ul>	

CHO to enforce the Safety Plan, and promptly resolves noncompliance or safety matters forwarded by the EHS Director, RSO and CHO.

#### **6. The Executive Director of Human Resources**

- Assists the Deans, EHS Director, CHO's, RSO, and Department Chairs, as requested, in dealing with issues of faculty and staff noncompliance (University-wide.),
- Records faculty and staff noncompliance issues in employment files and coordinates appropriate disciplinary claims consistent with Personnel and Faculty Handbooks.
- Manage the University database for tracking employee training records and works with the EHS Director to coordinate employee training requirements and programs.
- They ensure that the university-wide sharps injury log is maintained and that on an annual basis, data is submitted to HR for this purpose.

#### **7. The Director of Facilities Services and Director of Campus Planning:**

- Responsible for departmental implementation and compliance with the regulations contained in the Safety Plan.
- Verify that all construction, modifications or renovations to facilities meet federal and state licensing requirements as applicable and verify that regular inspections of safety equipment (eyewash stations, guarding) installed for use by Facilities personnel are performed.
- Responsible for receiving work orders and facilitating the prompt repair of all emergency related equipment and devices.

#### **8. The Environmental Health and Safety Director**

- Develops and implements a Safety Manual in accordance all State and Federal regulatory agencies and regularly reviews and interprets changes to Federal and State regulations in order to amend the Safety Manual and to communicate both new safety matters and associated impacts to policies.
- Maintains a copy of professional training certificates and licenses that are required by Federal and State regulations, oversees the UNE Blackboard training modules and ensures annual updates, coordinates the training of University faculty and staff affected and assigns training responsibilities to UNE job description and annually, alerting employees as to their training requirements.
- Provides technical advice to principal investigators (PI) on research projects and assists in identifying and monitoring potential toxicity hazards.
- In partnership with the Chemical Hygiene Officers, monitors personal protective equipment (i.e. gloves, goggles, etc.) for laboratory operations.
- Oversees the proper storage and disposal of hazardous and biomedical waste, and other special types of waste.
- Addresses issues of non-conformance with the Safety Manual to Department Chairs and/or Directors who will be expected to follow up to assure compliance is achieved. Continued safety (noncompliance) matters will be documented and forwarded to the Dean or Vice President for enforcement. (The Director of Human Resources will be advised of any noncompliance issues that could lead to a disciplinary matter for faculty or staff. The Dean of Students will be notified if a student is involved.) The EHS Director will also advise the Vice President for Business and Finance whenever violations are not corrected for final resolution. The EHS Director will authorize closure of non-compliant laboratories until issues have been resolved.
- With the assistance of departments, all on-site respiratory equipment, initial, annual, and other required fit tests for users who utilize respiratory equipment will be done by the EHS Director.
- Assist any department on campus, when requested, in developing prudent practices and Standard Operating Procedures (SOP's) for the handling of chemicals and assists with replacing hazardous substances with less hazardous substances.

- Provides technical supervision and training to the CHO's and RSO regarding the potential chemical, biohazard and/or radiation hazards associated with each laboratory as well as the required level of PPE and equipment to be used in each laboratory.
- Ensures that chemicals, radioactive, and biohazard materials are stored in facilities that meet Federal and State guidelines.
- Handles requests/complaints from University community for monitoring air and/or surface contamination by chemical, radioactive, and biological hazardous materials and investigates accidents involving medical, chemical, radioactive, and biological hazardous material. Exposures will be reported to the necessary departments as needed.
- The EHS Director will investigate Blood-borne Pathogen (BBP) exposure incidents and HR will administer the Hepatitis B vaccination program for employees.
- Maintains the master file for safety data sheets (SDS) for chemically hazardous materials used at the University. [SDSs must also be maintained at all locations where chemicals are stored. This may include electronically on a shared computer that all staff members have access to].
- Maintains adequate records and contracts for all contractors for use in administering the Safety Plan.
- Provides initial emergency response to chemical, radiation, biohazard and/or oil spills.
- Investigate all new proposals dealing with radionuclide usage and grants approval as appropriate.
- Chairs the University Wide Safety Committee (UWSC).
- Maintain an updated list of contractors who may be available to handle any and all emergencies and encourage the substitution of less hazardous substances with those currently being used.

#### **9. The Environmental Health and Safety Specialist:**

- Assisting department heads, supervisors, and faculty in determining which wastes are hazardous. They arrange for and coordinate off-site shipments of hazardous waste and prepare all required Federal and State reports required for generators of hazardous waste and storage of hazardous chemicals. They conduct frequent inspections in designated Satellite Hazardous Waste Accumulation Areas (SAAs) to assure that daily inspections are taking place and are logged.
- Assists chemical hygiene officers or persons assigned as hazardous materials/chemical inventory coordinators in conducting annual chemical inventory, providing information to UNE community on proper handling, storage and labeling of hazardous materials, maintaining an electronic database for the chemical inventory and assisting departments in the development on spill procedures.
- Assists in developing and implementing a Safety Manual in accordance all State and Federal regulatory agencies and regularly reviews and interprets changes to Federal and State regulations in order to amend the Safety Manual and to communicate both new safety matters and associated impacts to policies.
- Provides technical advice to principal investigators (PI) on research projects and assists in identifying and monitoring potential toxicity hazards.
- Oversees the proper storage and disposal of hazardous and biomedical waste, and other special types of waste.
- Ensures that chemicals, radioactive, and biohazard materials are stored in facilities that meet Federal and State guidelines.
- Provides initial emergency response to chemical, radiation, biohazard and/or oil spills.
- Completes all state and federal governmental reporting for environmental safety and health programs and updates and applies for all licenses such as air emissions, chemical reporting, fuel usage, etc.
- Participates in the inspection and auditing of laboratory and/or clinic activities and facilities; helps recommend appropriate safety/waste management procedures and corrective actions in accordance with established best practices and in compliance with federal, state, and local regulations and in coordination with related regulatory requirements and safety programs.

- Maintains a comprehensive and accurate record of inspections, training, and compliance documentation.
- Provide guidance with personal protective equipment selection based on the findings in the job hazard analysis.
- Ensure that ventilation systems in the laboratories and stockrooms (including fume hoods) are on a preventive maintenance schedule, regularly tested and repairs made for any malfunctioning system. Records of inspections, tests, and repairs will be kept by EHS.

**10. The College Chemical Hygiene Officer (CHO)** also has many roles including:

- 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.
- 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.
- 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.
- Document that faculty, staff and students have been trained regarding the University's chemical hygiene rules and plan.
- Make sure that the required levels of protective apparel and equipment are available and in working order.
- Verify EHS receives copies of SDSs for all chemicals received within the College and that an SDS binder is maintained in the College laboratories/stockrooms for all chemicals in inventory or stored electronically on a shared computer that can be accessed by all users.
- Verify that periodic chemical inventories are updated for all laboratories and stockrooms and forwards a copy to EHS.
- 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.
- Coordinate the development and implementation of written safety procedures for all faculty research and educational laboratories.
- 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.
- Provide regular, non-scheduled, chemical hygiene inspections including emergency equipment in laboratories.
- Remain current on legal requirements concerning regulated substances.
- Always look to improve the chemical hygiene plan.
- Periodically check on designated Satellite Hazardous Waste Accumulation Areas (SAAs) to assure that daily inspections are taking place and are logged. (Laboratory Technicians and EHS also assist in inspection of SAA logs).
- Assist EHS in coordinating hazardous waste disposal in accordance with Federal and State regulations and attend required State, Federal and University required training.
- May also be required to provide emergency response in the event of a chemical or biohazard exposure.

**11. The Radiation Safety Officer (RSO) :**

- Develops and implements the University's Radiation Safety Plan (RSP), conducts an annual audit of the radiation safety program and maintains a record to comply with license conditions required by the Nuclear Regulatory Commission (NRC).



- Regularly reviews University compliance required by the RSP, the NRC, EPA, DOT, OSHA and any other federal and state regulations as applicable to low-level Radioisotope work.
- Maintains a registry of all persons and facilities subject to the Radiation Safety Plan.
- Assists faculty and staff in the storage of, use, signage, and waste disposal of radionuclides associated with applicable laboratories.
- Conducts periodic leak testing of sealed radioactive sources as required by NRC license.
- Conducts and documents a semiannual inventory of all radionuclides and maintains complete and accessible records of program operations that are in a form suitable for inspection by regulatory agencies, investigates all new proposals dealing with radionuclide usage, conditions of use, and grants approval as appropriate.
- Identifies situations where faculty, laboratory workers and support staff may be at risk for over-exposure to radioactive materials and seeks the advice and guidance of the EHS Director and recommends corrective action, identifies and reports matters of continued safety to the EHS Director and recommends immediate follow up to the Department Chair. [Continued enforcement concerns will be reported to the Dean and Vice President for Business and Finance by the EHS Director].
- Closes noncompliant laboratories after consultation with the EHS Director. [Laboratories will be closed when it can be demonstrated that the laboratory or operation of a laboratory pose an imminent danger to life, health or safety] and re-approves operations once conditions are satisfactory.
- Keeps a file of all radioactive waste disposal regulations, and ensure that they are followed, receives appropriately packaged and labeled radioactive wastes generated by University laboratories that require disposal outside the laboratory and repackage if necessary for appropriate disposal.
- Keeps detailed records of amounts and methods for disposal of radioactive wastes.
- Monitors and records the release of radioactivity from the University including those to the environment and to waste disposal sites utilizing waste disposal companies.
- Monitors and records all releases from decay storage of formerly radioactive material to conventional disposal vendors, and identifies and reports radiation safety concerns to the Department Chair, EHS Director and Dean, when appropriate, for resolution.

**12. Department Chairs (Academic) and Director of Marine Science Center:**

- Assumes departmental supervisory responsibility in matters of safety for faculty, staff, and students, responds to problems with appropriate corrective actions.
- Assists the EHS Director in determining what training is required for their personnel based upon job descriptions and duties.
- Assists EHS in conducting job hazard assessments, assures that departmental faculty/staff (and work-study students) are trained to be compliant with health, chemical, radiation and/or biohazard safety considerations and are aware of the potential hazardous materials conducting work sessions or experiments in compliance with Safety Manual. Training must be completed before jobs are assigned.
- Ensure written safety procedures exist and are followed for all faculty research and educational laboratories and studios. Before performing hazardous non-routine tasks, each affected employee will be given information by their section supervisor about the hazardous chemicals to which they may be exposed.
- Confers regularly with the department faculty regarding all research activities and is knowledgeable of the types of laboratory experiments being carried out.
- They encourage the substitution of less hazardous substances with those currently being used.
- Identify, with the assistance of EHS, those operations which may require respiratory protection equipment and make sure those who require respirators receive training in the proper use and maintenance of the equipment. They get assistance from EHS in evaluating new operations that may present health and safety

hazards and enforce the use of respiratory protective equipment and provide appropriate personal protective equipment (PPE).

- Enforce the use of personal protective equipment and engineering controls.
- Ensure that daily inspections of hazardous waste accumulation areas (SAA's) are conducted.
- They make sure that a list of hazardous materials/chemicals used in the department, is forwarded, annually, to the Environmental Health and Safety Specialist, ensure proper labeling and storage of hazardous chemicals and materials.
- Ensure that safety data sheets (SDSs) for chemicals or hazardous materials ordered through the department are forwarded to EHS.
- Make sure that all hazardous materials and chemicals are stored and labeled appropriately.
- Direct faculty to develop spill procedures as necessary and provide spill containment equipment as necessary.
- Identify which individuals are covered under the exposure control plan with the assistance EHS and report all Blood-borne Pathogen exposures to EHS and assist in the investigation.
- They will notify the CHO, RSO, and EHS Director of any identified potential health and safety hazard or any factors that may warrant additional investigation.

### **13. Laboratory Instructor/Principal Investigator:**

- All faculty or staff that conduct the following activities are considered either a Laboratory Instructor or Principal Investigator:
  - Supervise staff (teaching and research assistants, postdoctoral and technical staff, fellows and work-study students) in the use of, handling of and/or storage of chemicals or hazardous materials (biological, chemical and/or radioactive) and equipment,
  - Involved in laboratory preparation,
  - Conducting laboratory experiments or
  - Provide instruction involving a laboratory experiment.
- The duties of the Laboratory Instructor/ Principal Investigator include:
  - In collaboration with the CHO/RSO assure that laboratories are operated within the approved space limits, assure that laboratories are a safe place to work, and provide for the safety of visitors in laboratories under their supervision.
  - They have primary responsibility, in cooperation with the EHS Director, CHO and RSO and Department Head for following the University Safety, Exposure Control, Chemical Hygiene and/or the Radiation Safety Plans while working in a laboratory including:
    - Ensure that laboratory workers know and follow the policies and procedures governing the handling and working with biological materials, chemicals and/or radionuclides.
    - Attend annual training sessions as required by the Safety Manual.
    - Perform weekly Satellite Accumulation Area (SAA) inspections.
    - Ensure that hazardous waste streams from their laboratory are correctly identified, profiled and managed.
    - Ensure that all laboratory staff and students are familiar with the use and location of emergency equipment including fire extinguishers, fire alarms, safety showers, and eyewash stations.
    - Ensure that the laboratory first aid kit is maintained. The Department of Environmental Health and Safety provides the initial kit, from then on, it shall be maintained by the laboratory instructor through the Department budget.
  - Know the current legal requirements concerning regulated substances and ensure, in cooperation with the CHO and EHS Director that facilities and training for use of any chemical being ordered are adequate.

- Maintain an up to date inventory of laboratory chemicals and provide the CHO and the EHS Director with copies of new SDSs. Keep SDSs for all chemicals in a readily accessible on site location as required by the Safety Manual and federal law.
- Document any waste minimization efforts and turn that information into EHS.
- Assist EHS in conducting job hazard assessments.
- As part of the safety plan, review and be prepared to implement procedures for dealing with exposure to a hazardous material (blood-borne pathogen, chemical and/or radionuclides) accidents affecting personnel or the environment. Before starting work on non-routine tasks, each affected employee will be given information by their section supervisor about the hazardous chemicals to which they may be exposed during this activity.
- Ensure that eyewash stations are checked and purged weekly.
- Semiannually verifies that other protective equipment (i.e. fume hoods, fire blankets, fire extinguishers, etc.) are functional. Reports any malfunctions immediately to the CHO and EHS. They will predetermine the required levels of protective apparel and equipment for the laboratory and enforce the use of PPE in areas where it is required.
- They will utilize issued respiratory protection equipment in accordance with instruction and training provided by EHS personnel, inspect respirators for defects prior to use and maintain them in a clean condition and ready to use at all times. They will inform his/her department head, supervisor, or instructor of any personal health problems that could be aggravated by the use of respiratory equipment.
- Identify potential risks associated with each laboratory process and give appropriate training to students.
- Make sure that work areas where biological agents (i.e. blood-borne pathogens), chemicals or radionuclides are in use or stored are properly designated with signage, control the handling, identification and labeling of biological, chemical and/or radioactive waste for proper disposal in clearly marked chemical and/or radioactive waste collection areas and control the handling, identification and labeling of glass/sharps waste for proper disposal in clearly marked waste collection areas.
- Report all employee (including student work-study) accidents and injuries to the Department of Human Resources the Department Head, and EHS.
- Assure that a Sharps Injury Log is maintained and forwarded to the Department of Human Resources. They will refer possible over exposures to the CHO, EHS and the Director of University Health Services for exposure evaluation as appropriate and report all Blood-borne Pathogen exposures to EHS.
- At the building Muster Station (according to the UNE Emergency Action Plan) accounts for students in their classroom or laboratory after the evacuation of the building.

**14. Laboratory Technician/Fellow** (includes University employees including technical staff, teaching, postdoctoral, and research assistants, as well as students conducting experiments in the laboratory setting and/or participating in academic research or experiments).

- The laboratory technician must receive training and be familiar with the risks associated with a particular laboratory experiment or process. Training can be achieved from oral instruction or by reading safety and bio-safety materials related to the laboratory.
- Responsible for making sure that individuals understand safety materials and instructions before approving an experiment.
- Develops good personal hygiene and safety habits for handling and working with biohazards, chemical and/or radionuclides.
- Utilizing the knowledge gained from training and research, review material safety data sheets of hazardous materials/chemicals used, reduce the amount of hazardous materials used in their laboratory whenever

possible, and are aware that biological, chemical and/or radioactive waste must be collected, identified, and labeled and stored in appropriate on site collection areas.

- Plans and conducts laboratory and/or stockroom operations in order to comply with provisions of the Safety Manual.
- Uses recommended personal protective equipment (PPE) as required, maintains PPE as required.
- Becomes familiar with the use and location of emergency equipment, including fire extinguishers, fire alarms, safety showers, and eyewash stations, immediately reports all accidents, to the laboratory supervisor, and reports unsafe conditions or defective equipment to the laboratory supervisor.

#### **15. Faculty/Staff/Work Study Students:**

- All faculty, staff, and students that may handle or transport chemicals, radioactive or biohazard materials as part of their job must become familiar with the Safety Manual, attend annual training and comply with the Safety Manual.
- Develop good personal hygiene and safety habits for handling and working with biohazards, chemical and/or radionuclides utilizing the knowledge gained from training and research.
- Review safety data sheets of hazardous materials/chemicals used and look to reduce the amount of hazardous chemicals they use and document any waste minimization efforts and supply the documentation to EHS at the end of each calendar year.
- Be aware of waste (biohazard, broken glass, hazardous chemical waste, silver recovery unit) collection areas.
- Become familiar with location of emergency equipment including fire extinguishers, fire alarms, safety showers and eyewash stations, and if needed, wear PPE issued in accordance with policy per training provided by EHS and their supervisors.
- Know what tasks have a potential occupational exposure to Blood-borne Pathogens and report all potential BBP exposure to their department head, supervisor, or faculty member. They will immediately report all accidents to the laboratory supervisor.
- Complete a Sharps Injury Log when appropriate and forwards to the supervisor. All Faculty/Staff/Work Study Students should inform the supervisor of any factors that may warrant additional investigation.
- At the building muster station faculty and staff account for students in their classroom, laboratory or office space/department after the evacuation of the building.

#### **16. Art Studio/Darkroom Instructor:**

- All faculty, staff, and students that may handle or transport chemicals (film developing, paints, paint thinners) as part of their job shall have taken the appropriate level of safety training for handling of hazardous chemicals.
- They will review all SDSs for their chemicals and keep them on file. They will notify EHS of any waste streams that are collecting and work with EHS to have chemical waste disposed of properly.

#### **17. Director of Safety and Security**

- Responsible for community-wide safety and security.
- Serve as liaison with regulatory agencies on the Local, State, and Federal levels, as well as non-regulatory accrediting groups in order to ensure that the University meets municipal disaster plan requirements.
- Schedules and supervises fire, emergency, and crisis response drills in conjunction with EHS and the office of Residential Life, as appropriate and verifies that the fire extinguishers and emergency lighting are functional.
- Responsible for visual inspection of all University fire extinguishers on a monthly basis and verify that fire extinguisher inspection tags are properly initialed and dated confirming monthly inspection.
- Support the CHO, RSO or EHS Director by providing emergency personnel with Safety Data Sheets (SDS) sheets in the event of over exposures and/or spills from chemicals.

- Assist the Environmental Health and Safety Office in conducting job hazard assessments to determine proper personal protective equipment necessary for each job, and take the necessary training themselves to obtain a full understanding of the hazards and the practices and procedures needed to perform all jobs under their supervision.
- Before starting work on non-routine activities, each affected employee will be given information by their section supervisor about the hazardous chemicals to which they may be exposed.
- The University Wide Safety Committee advises EHS of unsafe conditions and practices and assists in corrective actions.

**18. Director of University Health Care, Medical Director, Head Nurse, COTC Director and Dental Hygiene Chair**

- Create a Medical Evaluation Plan for the referral, treatment, and reporting of possible overexposure to a hazardous chemical(s), biological agent and/or radionuclides.
- Maintain a policy for the referral, treatment, and reporting of possible exposure to human blood, body fluids or tissues, or other potentially infectious materials and provide treatment for faculty, staff and students that are exposed to blood-borne pathogens.
- Assist EHS in conducting job hazard assessments and assist the EHS Director in determining what training is required for their personnel based upon job descriptions and duties.
- Before starting work on non-routine tasks, each affected employee will be given information by their section supervisor about the hazardous chemicals to which they may be exposed.
- Provide emergency medical services to the University community for injuries or accidents as necessary.
- Request information (SDS), if applicable, from the appropriate Department Chair, Laboratory Instructor, and/or Principal Investigator in order to treat an overexposure to chemicals, biohazards, and/or radionuclides.
- They are knowledgeable of the types of tests and procedures being conducted in University Health Care (UHC) and clinics and make safety recommendations to the physicians, professional staff and EHS.
- Verify that the EHS receives copies of SDS sheets for all chemicals and drugs in stock at each site and that an SDS binder is maintained on site.
- Periodic control drug inventories are updated for all UHC sites and that a copy is forwarded to EHS.
- Investigate exposures to blood-borne pathogens and report to EHS and seek advice and guidance of EHS in order to provide corrective action.
- Assure that the Needle stick Prevention Device Evaluation Form is completed and submitted to EHS on an annual basis and ensure that the Sharps Injury Logs are maintained and forwarded to the Department of Human Resources on an annual basis.
- Frequent inspections of Satellite Waste Accumulation Areas are conducted, if applicable, to assure that daily inspections are taken place and are logged in as required.
- Attend required annual training by all State, Federal and University requirements as needed.
- Ensure that any defective equipment is repaired or replaced.
- Identify those operations which may require respiratory protection equipment and ensure that faculty, staff, and students who require respirators receive training in the proper use and maintenance of the equipment. They request assistance from EHS in evaluating new operations that may present health and safety hazards, enforce the use of respiratory protective equipment and other requirements, arrange for Pulmonary Function Tests (PFT's) and Chest X-Rays, provide and maintain appropriate personal protective equipment (PPE).
- Report all UHC Blood-borne Pathogen exposures to EHS and assist in the investigation. They will identify which faculty, staff, and students are covered under University Exposure Control Plan.
- Provide a list of hazardous materials/chemicals and controlled substances used in the clinics, annually to

EHS.

**19. Head Athletic Trainer, Supervisor of Housekeeping, Supervisor of Facilities, UHC Site Supervisors, Dental Hygienists, Animal Caretakers, Clinicians, Aquatics Director and Nurses:**

- Must abide by the safety manual.
- Provide blood-borne pathogen training to staff in cooperation with EHS. Training records must be documented and forwarded to the Office of Human Resources and EHS.
- Assist the EHS in conducting job hazard assessments, assist in determining what training is required for their personnel based upon job descriptions and duties.
- Encourage the substitution of less hazardous substances with those currently being used, and document any waste minimization efforts and supply the documentation to the EHS at the end of each calendar year.
- Appoint hazardous material/ chemical inventory coordinators as needed and provide a list of hazardous materials/chemicals used in the department, annually to EHS.
- Ensure proper labeling and storage of hazardous chemicals and materials.
- Provide material safety data sheets (SDS's) for chemicals or hazardous materials ordered through the department to EHS.
- Develop spill procedures as necessary.
- Ensure that daily inspections of hazardous waste accumulation areas are conducted.
- Predetermine the required levels of protective apparel and equipment for employees and enforce the use of PPE in areas where it is required.
- Identify those operations which may require respiratory protection equipment and ensure that faculty, staff, and students who require respirators receive training in the proper use and maintenance of the equipment. They may request assistance from EHS in evaluating new operations that may present health and safety hazards and enforce the use of respiratory protective equipment and other requirements when applicable.
- Before starting work on non-routine tasks, each affected employee will be given information by their section supervisor about the hazardous chemicals to which they may be exposed during this activity.
- Ensure that any defective equipment is repaired or replaced.
- Assure that non employees who sustain injuries and/or illnesses report to the person/s in charge of or responsible for that person and report all student accidents and injuries to the Department of Safety and Security. They will inform EHS of any factors that may warrant additional investigation.
- Assure that the Needle stick Prevention Device Evaluation Form is completed and submitted to EHS on an annual basis.
- Ensure that the Sharps Injury Logs are maintained and forwarded to the Department of Human Resources on an annual basis.
- At the building muster station accounts for employees or students in their department, academic unit or classroom after the evacuation of the building.

**20. Assistant Dean of Students/Resident Life Director:**

- Responsible for the administration, implementation and evaluation of the Evacuation Plan in residence halls, conducting appropriate training or evacuation exercises to test the preparedness and response procedures of the residence hall staff (RAs)
- Providing the names and phone numbers of the residence hall staff to the Director of Security.
- Executing emergency evacuation if necessary.
- Ensuring that the University meets all Federal, State and Local disaster plan requirements for residence halls.
- Ensuring that RAs provide emergency Evacuation Plan training for all residents.
- Ensuring that evacuation routes are strategically posted and that students are trained to assemble at their

designated muster locations.

- Ensuring that emergency first aid kits are maintained by the RAs.
- Providing blood-borne pathogen training to the RAs. Document such training in the Office of the Assistant Dean of Students and to the EHS Director.
- Providing and maintaining appropriate personal protective equipment (PPE) and at the building muster Station (according to the UNE Emergency Action Plan).
- Accounts for employees or students in their department, academic unit or classroom after the evacuation of the building.

**SECTION 1.2**

**CONSEQUENCES OF NONCOMPLIANCE**

Faculty, staff and students of the University are responsible for ensuring that they follow the procedures and faithfully implement the appropriate responsibilities put forth in the Environmental Health and Safety Manual. A noncompliance is a serious breach of University policy and is subject to disciplinary action that might include termination of employment for faculty and staff or dismissal from the University for students. The procedures to be followed in the event of such action will be in keeping with the disciplinary policies in the Personnel Handbook, as it applies to Faculty and Staff, and in the Student Handbook, as it applies to students.

**SECTION 1.3**

**COMPLIANCE ASSISTANCE**

- It is assumed that each administrator, faculty member, staff person, and student will be attentive to and responsible for the University's need to provide a safe living, learning and working environment by complying with this manual.
- EHS assists departments in compliance efforts by periodically inspecting all areas of the campus and identifying potential problems. The inspections are documented on the Laboratory or Mechanical Space Checklist, whichever is appropriate, and serious problems are brought to the attention of the responsible department head, supervisor and in some cases Dean or Vice President upon completion of the visit for immediate corrective actions. Findings are documented utilizing a Safety Notice, which outlines the areas of concern, recommended corrective measures, and offers of EHS assistance and forwarded to the responsible department head or supervisor. Once this report has been submitted, EHS will request a meeting with the responsible department head or supervisor to formulate a collaborative solution, set expected dates of completion, and methods to prevent reoccurrence.
- If the solution that has been agreed upon has not been achieved by the expected completion date or if no solution can be agreed upon, EHS will request a meeting with the responsible Dean or Vice President to assist in resolution. Sufficient data, including a copy of the original documentation and any corrective action to date, as well as expected completion dates will be presented and discussed at this time.

**SECTION 1.4**

**CONFLICT RESOLUTION STRATEGIES**

- In the event that EHS and the responsible senior administrator cannot agree on an appropriate course of corrective action, the Vice President of Operations and the Risk Manager will be brought in to facilitate an appropriate resolution.
- If that in turn is unsatisfactory, a discussion will be held with the affected senior administrators, Chief of Compliance, EHS and the President (as necessary), to resolve the matter.

<b>SECTION 1.5</b>	<b>DISCIPLINARY ACTIONS</b>
<ul style="list-style-type: none"> <li>Faculty or staff failure to comply with the contents of this manual will result in disciplinary action in accordance with procedures outlined in Section 8: Standards of Conduct and Disciplinary Procedures in the UNE Personnel and Faculty Handbooks.</li> </ul>	
<b>SECTION 1.6</b>	<b>UNIVERSITY POLICY ON INSPECTIONS</b>
<p><b>1. Policy:</b></p> <ul style="list-style-type: none"> <li>It is the policy of the University of New England to co-operate with all Governmental Regulatory agencies when they visit the University. We will attempt to accomplish this with a minimum of disturbance to normal activities of the University.</li> <li>Most governmental regulatory agencies have inspection authority that does not require advance notice to the business owner. Therefore, the University must always anticipate and be prepared for an unannounced inspection.</li> <li>Examples of Governmental agencies with this authority include the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA) and the Local Fire Department. In rare instances, officials, who may not be familiar with either campus or our internal policies, could proceed directly to the area they want to inspect without stopping by Security or Facilities Management. The following procedures should be followed in all cases.</li> </ul> <p><b>2. Procedure for all employees:</b></p> <ul style="list-style-type: none"> <li>When greeted by an agent or compliance officer of a regulatory agency the employee shall ask the official for identification. Do not feel that you're being rude, these men and women are professionals who anticipate and are prepared to show identification upon request.</li> <li>On the Biddeford Campus (BC), call Facilities Management at Ext. 2368 and EHS at 2488, on the Portland College Campus (PC), call Facilities Management at 4392 and EHS at 2488 and tell them <ul style="list-style-type: none"> <li>Who has arrived,</li> <li>What agency they are from and</li> <li>(If known) what is the purpose of their visit.</li> </ul> </li> <li>Facilities will send the appropriate qualified staff member(s) to your location.</li> <li>Do not leave a voice-mail message if there is no answer at facilities. Make at least 3 attempts. If after the third attempt, there is no contact with facilities, call security at 366 so they can attempt to contact facilities via cell phone(s) or radio.</li> <li>Be courteous but do not volunteer information to inspectors regarding UNE facilities or procedures. If you are asked a specific question by an inspector advise him/her that it is your intent to cooperate fully however you would like to speak to the University's designated contact person first. In most cases the designated contact person will be EHS.</li> </ul> <p><b>3. Procedure Facilities Management</b></p> <ul style="list-style-type: none"> <li><u>Inspection Personnel:</u> There will be one person who acts as the single point of contact/communication with the inspector(s) during their investigation. Additional personnel (including Deans, laboratory coordinators, chemical hygiene officers and/or facilities personnel) familiar with the specific operations that are inspected should be included on the inspection team as necessary. Generally, Director of Environmental, Health and Safety will serve as the main contact during an investigation, or if unavailable, the Director of Facilities Management.</li> <li><u>Verify Proper Identification:</u> All regulatory agents/inspectors carry photo identity cards properly identifying themselves. Ask the inspector if you may photocopy their ID or copy the name down.</li> <li>Alert Security at Extension 366 to be on standby.</li> </ul>	



- Meet with inspectors in order to arrange for an Opening Conference Meeting Room/Location.
- Opening Conference: In most cases, specifically with formal Federal and State Inspections, there should be an opening conference between the Inspector/agent, the Director of Environmental Health and Safety and the Director of Facilities Management to discuss the purpose of the inspection and answer all questions. At this time, inspection details, logistics and schedules will be determined. Inspections by local officials such as the Fire Department will be less formal and in fact may take place at the site of the inspection. Logistics and scheduling are seldom issues in these cases.
- Inspection: A designated campus representative will accompany the Inspector during the entire inspection to explain or answer questions and will take notes. Employees with specific knowledge of an area may be required to accompany the inspection team. By law, most regulatory agencies may speak to any of our employees, either in private or with a University official present. Employees should respectfully answer any questions, without volunteering any additional information. If the Inspector indicates a possible violation and/or takes a photo, the University official accompanying him/her will make notes of the violation and also take photos of the same area. If samples are taken the University shall request duplicates of the sample and request that they be marked as confidential business information.
- Closing Conference: For formal Federal and State inspections the University will request a closing conference at the end of each day of inspection. This conference may be informal in nature and may take place at the inspection site. The University shall request a formal exit conference on the final day of all inspections. Determine how and when a final copy of the inspection report can be obtained. Request that the report include the specific code and section of ordinance/law or regulation that has been cited.
- Post Inspection: A follow-up letter should be sent to the Inspector or appropriate agency program or enforcement office stating the University's continued willingness to cooperate.

**4. Procedure Safety and Security**

- When notified by a member of the community that an Inspector of a regulatory agency has arrived on campus the Security Office/officer shall verify that Facilities Management has been notified per this procedure. If not, the officer is to immediately contact Facilities Management, by any means necessary, with the needed information.
- When the inspection is conducted by the local Fire Department a Safety and Security Supervisor shall be notified and whenever practical accompany the Inspector and the Facilities Management designated contact person on the inspection.

**PHONE NUMBERS**

Facilities Management University Campus	2368
Facilities Management Portland College Campus	4392
Director of Environmental, Health, and Safety	2488
Environmental Health and Safety Specialists	2791/2046
Safety and Security	366

<b>SECTION 2.0</b>	<b>GENERAL RULES</b>
<p><b>1. Introduction:</b> The following general safety rules are to be followed by all departments.</p>	
<b>SECTION 2.1</b>	<b>RESPONSIBILITIES</b>
<p><b>1. Environmental Health and Safety Department:</b></p> <ul style="list-style-type: none"> <li>• Develop and implement all general safety rules to be followed by employees.</li> <li>• Evaluate the general safety rules annually or as needed to ensure they are up to date.</li> <li>• Be a resource for any employee with questions on general safety rules.</li> <li>• Create and implement training programs for general safety rules.</li> </ul> <p><b>2. Managers, Supervisors, and Department Heads:</b></p> <ul style="list-style-type: none"> <li>• Abide by all general safety rules set forth in the Safety Manual.</li> <li>• Ensure all employees are attending training sessions as required.</li> <li>• Guarantee that employees are following all general safety rules and provide disciplinary action when necessary if they are not.</li> </ul> <p><b>3. Employees:</b></p> <ul style="list-style-type: none"> <li>• Abide by all general safety rules set forth in the Safety Manual.</li> <li>• Attend any training sessions online or in the classroom as required by your supervisor or the EHS department.</li> <li>• Provide any additional items that may need to be addressed under general safety rules.</li> </ul>	
<b>SECTION 2.2</b>	<b>POLICIES AND PROCEDURES</b>
<p><b>1. General Safety Rules:</b></p> <ul style="list-style-type: none"> <li>• Observe and abide all warning signs and safety notices.</li> <li>• Smoking is prohibited everywhere on UNE property. UNE is a smoke-free facility.</li> <li>• No running or horseplay is allowed in the workplace.</li> <li>• Guard all floor openings and edge of working platforms greater than 3 feet to prevent a fall.</li> <li>• Do not take unsafe short cuts or by-pass any safety devices or controls.</li> <li>• Never throw debris, tools or other objects from any height.</li> <li>• Report all unsafe acts, unsafe conditions or incidents/accidents to your supervisors and safety personnel.</li> <li>• Refer to Safety Data Sheet (SDS) before handling any hazardous materials.</li> <li>• For any hazardous work, safe operating procedure/safe work procedures must be referred and adhered to.</li> <li>• Label all chemical containers and store them in designated chemical storage area.</li> <li>• Do not deface or change any manufacturer’s labels on incoming chemicals or industrial products.</li> <li>• Know the location of the nearest emergency equipment including fire extinguishers, fire alarms, fire blankets, eye wash stations, safety showers, AED’s, etc.</li> <li>• Familiarize yourself with the emergency evacuation procedure and the location of the nearest exits and muster points. A list of muster point locations for each building can be found in UNE’s Annual Clery Report on the Safety and Security portion of the UNE website.</li> <li>• Do not obstruct or block any exits, escape passage way or any emergency response equipment.</li> <li>• Follow the manufacturer’s operating instructions when working with machinery.</li> <li>• Report all work related illness and injuries to Human Resources right away and submit an Incident/accident report.</li> </ul>	

## **2. General Tool and Device Safety:**

- The employer is responsible for the safe condition of tools and equipment used by employees but the employees have the responsibility for properly using and maintaining tools.
- All electrical tools will be in good repair.
- Saw blades, knives, or other tools should be directed away from aisle areas and other employees working in close proximity. Knives and scissors must be sharp. Dull tools can be more hazardous than sharp ones.
- Appropriate personal protective equipment, e.g., safety goggles, gloves, etc., should be worn due to hazards that may be encountered while using portable power tools and hand tools.
- Floors should be kept as clean and dry as possible to prevent accidental slips with or around dangerous hand tools.
- Keep all tools in good condition with regular maintenance
- Use the right tool for the job.
- Examine each tool for damage before use.
- Operate according to the manufacturer's instructions.

## **3. Power Tools and Devices--** The following general precautions should be observed by power tool users:

- Never carry a tool by the cord or hose.
- Never yank the cord or the hose to disconnect it from the receptacle.
- Keep cords and hoses away from heat, oil, and sharp edges.
- Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits and cutters.
- All observers should be kept at a safe distance away from the work area.
- Secure work with clamps or a vise, freeing both hands to operate the tool.
- Avoid accidental starting. The worker should not hold a finger on the switch button while carrying a plugged-in tool.
- Tools should be maintained with care. They should be kept sharp and clean for the best performance. Follow instructions in the user's manual for lubricating and changing accessories.
- Be sure to keep good footing and maintain good balance.
- The proper apparel should be worn. Loose clothing, ties, or jewelry can become caught in moving parts and should not be worn when working with machinery or equipment.
- All portable electric tools that are damaged shall be removed from use and tagged "Do Not Use."
- These general practices should be followed when using electric tools to avoid electrocution:
  - Electric tools should be operated within their design limitations.
  - Gloves and safety footwear are recommended during use of electric tools.
  - When not in use, tools should be stored in a dry place.
  - Electric tools should not be used in damp or wet location.
  - Work areas should be well lit.

## **4. Electrical Safety:**

- Cords will be of the three-wire grounded type whenever possible.
- All temporary power circuits will be equipped with a Ground Fault Circuit Interrupter. Use of an extension cord is considered temporary power.
- All temporary lighting fixtures will be equipped with bulb guards.
- Extension Cords:
  - Extension cords will not be used as a substitute for permanent wiring. Contact Facilities Management to install more electrical outlets if necessary.
  - Extension cords will not be plugged into each other in succession in order to reach an outlet.
  - Extension cords will not run through, behind, or in walls, ceilings or floors or other concealed space. Nor will

they be run in or through ventilation ducts.

- Do not place extension cords under carpets, under doors, or other locations that subject the cord to abrasion or other damage.
- Avoid creating a tripping hazard; do not place extension cords across walkways. If it is unavoidable, tape the cord to floor or walkway in order to negate the tripping hazard.
- Discard extension cords with broken wires or damaged insulation; splicing or taping is not allowed.
- Where hazardous atmospheres may exist, due to the presence of flammable gases or vapors or explosive dusts, extension cords will not be used.
- The combined length of the appliance cord and extension cord that is used on portable equipment, such a floor scrubber, projectors and hand tools, will not exceed 100 feet.
- Uncoil long cords when in use, to avoid overheating.
- Replace short appliance cords with a longer one when appropriate
- Select a cord with proper insulating materials if there will be exposure to moisture, oil or other chemicals.
- Frequently check the cord insulation, plug and connector for damage.

#### **5. Personal Housekeeping:**

- Good housekeeping is one of the best indications that a department is being well controlled and efficiently run. Poor housekeeping contributes to a host of hazards ranging from trip hazards to fire hazards.
- It is the responsibility of every person in each department to correct poor housekeeping. A continuous effort to eliminate trip hazards, and generally keep the work area free of hidden hazards, will contribute greatly to the job efficiency and the safety of faculty staff and work study students.
- Good housekeeping rules include but are not limited to:
  - Dispose of all garbage and food items in the proper receptacles in a timely manner. Do not leave food in your work area.
  - Do not leave rags lying around work areas.
  - Keep a neat and orderly work station
  - Close all drawers and cabinet doors after you have accessed them.
  - Make sure all containers are donning their lids and are stored properly.
  - Immediately clean up any spills in your work area, big or small.
  - Keep all exits, aisles and walkways clear at all times.

#### **6. Lifting:**

- UNE personnel will not lift objects which appear too heavy or awkward to be lifted properly. The limit under normal conditions is fifty (50) pounds, but may be less under differing conditions.
- Employees will use lifting assistance devices when an object is clearly too heavy to be lifted, including: hand trucks, pallet jacks, forklifts, and hoists, and follow all safety regulations pertaining to these devices.
- When lifting, follow these guidelines:
  - Stop and think before you lift to evaluate the load, don't rush
  - Keep heavy objects close to your body
  - When lifting heavy objects: spread your feet wide apart, stick out your chest and tuck in your chin, tighten your stomach muscles, keep your back upright, bend at the knees and not your back, keep your shoulders parallel to the floor as much as possible.
  - When carrying a load a long distance, occasionally shift it from one side to the other.
  - Do not lift and twist your back at the same time.
  - Do not lean forward without bending your knees.
  - Avoid lifting objects above shoulder level.

**7. Vehicle Operation:**

- Material Transport: Material being transported, on or off campus, will be done with the following precautions by licensed drivers:
  - All material will be secured in place prior to departure.
  - Tailgates will be in place.
  - All personnel will wear seat belts at all times.
  - Personnel will not ride in the bed of any vehicle or location that is not equipped with approved safety belts.
  - All state and federal traffic laws will be observed.

**8. Machine and Equipment Guarding:**

- Guarding will be provided for all machinery or equipment that has exposed moving parts that can cause injury, such as pulleys, gear, fly wheels, etc. The guarding must be designed to prevent any inadvertent contact with these hazards. Contact EHS for assistance in determining sufficient guarding.
- Machine guarding may not be removed or modified in any way due to safety hazards, failure to comply with this rule will result in disciplinary action as it puts other employee's at high risk for injury.

**9. Defective or Broken Equipment:**

- Any equipment that is found to be broken or defective will be removed from use. To ensure that no one is injured by defective or broken equipment the following actions should be taken:
  - Identify equipment with a tag or sign that states:
    - DANGER - In need of repair, do not use
    - The name of the person who found the equipment broken.
    - The nature of the defect (i.e. bare wire on electrical cord).
    - The date that the equipment was removed from service.
  - Notify your supervisor that the equipment is defective and place a work order with the online Facilities work order system for the item(s) to be repaired or replaced.
  - See Section 9 of the Safety Manual for Lockout/Tagout Procedures

**10. Safety Suggestions/Hazardous Condition Reporting:**

- Please contact the EHS Department to make suggestions regarding health or safety issues including: occupational safety (work procedures, equipment), and environmental health (health concerns inside or outside buildings).

**SECTION 2.3****TRAINING****1. Training:**

- All new hires will receive training that is commensurate with their jobs and will receive annual re-fresher training as required by OSHA.

**SECTION 3.0****FACILITIES MANAGEMENT SPECIFIC OPERATIONS****1. Introduction:**

- The following are safety rules for the topics that relate primarily to Facilities Management operations. It is important however, that all UNE personnel know about and understand such rules.

**SECTION 3.1****RESPONSIBILITIES****1. Environmental Health and Safety Department:**

- Provide training materials for all topics covered in this section.
- Review policies and procedures annually or as needed.

- Help Supervisors to ensure all policies and procedures are being followed properly.

## 2. Facilities Managers/Supervisors

- Make sure all employees have been trained in specific Facilities Operations areas.
- Assist in the permitting of Facilities activities and be aware of all permit required work being performed.
- Supervise all Facilities operations to make sure all safety protocol is being followed and provide disciplinary action and training if they are not.
- Ensure PPE is available to all employees and is being worn as required.

## 3. Facilities Employees

- Attend all required training sessions.
- Adhere to all safety policies and procedures as set forth by EHS.
- Report any problems or suggestions regarding policies, procedures, and equipment.
- Protect themselves and co-workers from unnecessary safety hazards.
- Obtain the proper permits for confined space entry, hot work, etc. when needed.

### SECTION 3.2

### POLICIES, PRACTICES AND PROCEDURES

#### 1. Welding/Cutting Operation:

- Fire protection (extinguisher) will be immediately available on all operations.
- When operating in a hazardous area containing flammable liquids, gases, or solids, a fire watch will be posted and will have been trained in how to use all fire equipment.
- All gas cylinders will be handled in accordance with Section 11.
- Flash shields will be used wherever possible.
- Eye protection will be used by welder/cutter and helper.
- Frames of all Arc welding/cutting machines will be grounded and all cables will be completely insulated and flexible, capable of handling maximum current requirements.
- Welding is prohibited in the following areas:
  - Areas not authorized by management.
  - In sprinkled buildings while such protection is impaired
  - In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside uncleaned or improperly prepared tanks or equipment which have previously contained such materials, or that may develop in areas with an accumulation of combustible dusts.
  - In areas near the storage of large quantities of exposed, readily ignitable materials such as bulk sulfur, baled paper, or cotton.
  - Where practical, all combustibles shall be relocated at least 35 feet (10.7 m) from the work site. Where relocation is impractical, combustibles shall be protected with flame-proofed covers or otherwise shielded with metal or asbestos guards or curtains
  - Ducts and conveyor systems that might carry sparks to distant combustibles shall be suitably protected or shut down.
  - Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings or roofs shall not be undertaken if the work is close enough to cause ignition by conduction.
  - Advise all contractors about flammable materials or hazardous conditions of which they may not be aware.
  - No welding, cutting, or other hot work shall be performed on used drums, barrels, tanks or other containers until they have been cleaned so thoroughly as to make absolutely certain that there are no flammable materials present or any substances such as greases, tars, acids, or other materials which when subjected to heat, might produce flammable or toxic vapors. Any pipe lines or connections to the

drum or vessel shall be disconnected or blanked.

- Welding Equipment and Confined Spaces:

- When arc welding is to be suspended for any substantial period of time, such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur and the machine be disconnected from the power source.
- In order to eliminate the possibility of gas escaping through leaks or improperly closed valves, when gas welding or cutting, the torch valves shall be closed and the gas supply to the torch positively shut off at some point outside the confined area whenever the torch is not to be used for a substantial period of time, such as during lunch hour or overnight. Where practicable, the torch and hose shall also be removed from the confined space.
- A welder or helper working on platforms, scaffolds, or runways shall be protected against falling. This may be accomplished by the use of railings, safety belts, life lines, or some other equally effective safeguards.
- Welders shall place welding cable and other equipment so that it is clear of passageways, ladders, and stairways.
- Helmets or hand shields shall be used during all arc welding or arc cutting operations, excluding submerged arc welding. Helpers or attendants shall be provided with proper eye protection.

- Welding Personal Protective Equipment:

- Goggles or other suitable eye protection shall be used during all gas welding or oxygen cutting operations. Spectacles without side shields, with suitable filter lenses are permitted for use during gas welding operations on light work, for torch brazing or for inspection.
- All operators and attendants of resistance welding or resistance brazing equipment shall use transparent face shields or goggles, depending on the particular job, to protect their faces or eyes, as required.
- Eye protection in the form of suitable goggles shall be provided where needed for brazing operations.
- Helmets and hand shields shall be made of a material which is an insulator for heat and electricity. Helmets, shields and goggles shall be not readily flammable and shall be capable of withstanding sterilization.
- Helmets and hand shields shall be arranged to protect the face, neck and ears from direct radiant energy from the arc.
- Helmets shall be provided with filter plates and cover plates designed for easy removal. All parts shall be constructed of a material which will not readily corrode or discolor the skin.
- Goggles shall be ventilated to prevent fogging of the lenses as much as practicable. All glass for lenses shall be tempered, substantially free from striae, air bubbles, waves and other flaws. Except when a lens is ground to provide proper optical correction for defective vision, the front and rear surfaces of lenses and windows shall be smooth and parallel. Lenses shall bear some permanent distinctive marking by which the source and shade may be readily identified.

- Protection from arc welding rays:

- Where the work permits, the welder should be enclosed in an individual booth painted with a finish of low reflectivity such as zinc oxide (an important factor for absorbing ultraviolet radiations) and lamp black, or shall be enclosed with noncombustible screens similarly painted. Booths and screens shall permit circulation of air at floor level. Workers or other persons adjacent to the welding areas shall be protected from the rays by noncombustible or flameproof screens or shields or shall be required to wear appropriate goggles.

- Screens:

- When welding must be performed in a space entirely screened on all sides, the screens shall be so arranged that no serious restriction of ventilation exists. It is desirable to have the screens so mounted

that they are about 2 feet (0.61 m) above the floor unless the work is performed at so low a level that the screen must be extended nearer to the floor to protect nearby workers from the glare of welding.

- Ventilation:

- A source of ventilation must be utilized if there is a risk to harmful fumes. How much ventilation is required will depend on the substance and the size of the work area. See EHS for assistance if ventilation is needed.

## 2. Ladder Safety:

Design and use of ladders (manufactured or job-made) will conform to 29CFR 1910 and ANSI Standard A14. 1-1968 (both available from EHS). Listed below are some of these requirements.

- Portable Ladder-Manufactured: Stepladders longer than 20 feet shall not be supplied. There are three types of stepladders:

- Type I - Industrial stepladder, 3 to 20 feet for heavy duty, such as utilities, contractors, and industrial use.
- Type II - Commercial stepladder, 3 to 12 feet for medium duty, such as painters, offices, and light industrial use.
- Type III - Household stepladder, 3 to 6 feet for light duty, such as light household use.

- Metal Ladders: Metal ladders carry a high risk of electrocution if near power sources. Please follow all guidelines to alleviate the risk of electrocution when using metal ladders:

- Metal ladders will not be used while welding or where they can come in contact with electrical conductors.
- In most cases wooden or fiberglass ladders are preferable to metal.
- Make sure the ladder is clean and dry.
- Carefully check the location of all overhead wires before using a ladder. Any power line can permit electricity to flow into a piece of metal or other object, such as a wet tree branch, that touches it.  
**Note:** Power lines and phone lines often appear similar. Assume all overhead wires carry electricity.
- Lower the ladder when carrying or moving it, to avoid touching an overhead wire.
- Never work on a windy day; a gust of wind can cause the ladder to shift and touch an overhead wire.
- Never place a ladder where it could slide into an overhead line. Make sure the distance to the nearest overhead line is at least twice the length of the ladder.
- Place the ladder's feet on solid, level ground before climbing it. When the ground is not level or is soft, put a flat piece of wood under one or both feet of the ladder to provide a solid, level base.
- If the ladder should start to fall into an overhead line, let it go. Never try to move it. Do not leave the ladder unattended so that no one will unknowingly touch it. Have someone call the power company and ask them to cut off electricity to the line before you move the ladder.

- Wooden Ladders:

- All wood parts shall be free from sharp edges and splinters; sound and free from accepted visual inspection from shake, wane, compression failures, decay, or other irregularities. Low density wood shall not be used.
- A uniform step spacing shall be employed which shall be not more than 12 inches. Steps shall be parallel and level when the ladder is in position for use. The use of ladders with broken or missing rungs or steps, broken or split side rails, or other faulty or defective construction is prohibited.
- The minimum width between side rails at the top, inside to inside, shall be not less than 11 1/2 inches. From top to bottom, the side rails shall spread at least 1 inch for each foot of length of stepladder.
- Ladder feet will be placed on a substantial base and areas around the top and bottom will be kept clear.
- Ladders will be pitched so that the horizontal distance from the top support to the foot is no more than 1/4 the working length of ladder.
- Side rails will extend not less than 36" above the landing. Grab rails should be installed when this is



practical.

- A metal spreader or locking device of sufficient size and strength to securely hold the front and back sections in open positions shall be a component of each stepladder. The spreader shall have all sharp points covered or removed to protect the user. For Type III ladder, the pail shelf and spreader may be combined in one unit (the so-called shelf-lock ladder).
- General Ladder Safety: Ladders shall be maintained in good condition at all times, the joint between the steps and side rails shall be tight, all hardware and fittings securely attached, and the movable parts shall operate freely without binding or undue play.
  - Metal bearings of locks, wheels, pulleys, etc., shall be frequently lubricated.
  - Frayed or badly worn rope shall be replaced.
  - Safety feet and other auxiliary equipment shall be kept in good condition to insure proper performance.
  - Ladders shall be inspected frequently and those which have developed defects shall be withdrawn from service for repair or destruction and tagged or marked as "Dangerous, Do Not Use."
  - Rungs should be kept free of grease and oil.
  - Portable rung and cleat ladders shall, where possible, be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is one-quarter of the working length of the ladder (the length along the ladder between the foot and the top support). The ladder shall be so placed as to prevent slipping, or it shall be lashed, or held in position. Ladders shall not be used in a horizontal position as platforms, runways, or scaffolds.
  - Ladders for which dimensions are specified should not be used by more than one man at a time, nor with ladder jacks and scaffold planks where use by more than one man is anticipated. In such cases, specially designed ladders with larger dimensions of the parts should be procured.
  - Portable ladders shall be so placed that the side rails have a secure footing. The top rest for portable rung and cleat ladders shall be reasonably rigid and shall have ample strength to support the applied load;
  - Ladders shall not be placed in front of doors opening toward the ladder unless the door is blocked upon, locked, or guarded;
  - Ladders shall not be placed on boxes, barrels, or other unstable bases to obtain additional height;
  - Short ladders shall not be spliced together to provide long sections;
  - Ladders made by fastening cleats across a single rail shall not be used;
  - Ladders shall not be used as guys, braces, or skids, or for other than their intended purposes;
  - Tops of the ordinary types of stepladders shall not be used as steps;
  - No ladder should be used to gain access to a roof unless the top of the ladder shall extend at least 3 feet above the point of support, at eave, gutter, or roofline.
  - If a ladder is involved in any of the following, immediate inspection is necessary:
    - If ladders tip over, inspect ladder for side rails dents or bends, or excessively dented rungs; check all rung-to-side-rail connections; check hardware connections; check rivets for shear.
    - If ladders are exposed to oil and grease, equipment should be cleaned of oil, grease, or slippery materials. This can easily be done with a solvent or steam cleaning.
    - Ladders having defects are to be marked and taken out of service until repaired by either maintenance department or the manufacturer.
- Ladder Use
  - A simple rule for setting up a ladder at the proper angle is to place the base a distance from the vertical wall equal to one-fourth the working length of the ladder.
  - Portable ladders are designed as a one-man working ladder based on a 200-pound load.
  - The ladder base section must be placed with a secure footing.

- The top of the ladder must be placed with the two rails supported, unless equipped with a single support attachment.
- When ascending or descending, the climber must face the ladder.
- Ladders must not be tied or fastened together to provide longer sections. They must be equipped with the hardware fittings necessary if the manufacturer endorses extended uses.
- Ladders should not be used as a brace, skid, guy or gin pole, gangway, or for other uses than that for which they were intended, unless specifically recommended for use by the manufacturer.

### **3. Roof Access Policy:**

- Policy Statement: This policy is to establish requirements for the safety of UNE Professional Staff and contractors while accessing roofs in various locations around campus. The purpose of the roof access policy is to establish a set of guidelines and requirements that UNE Management, supervisors, Professional Staff and contractors must uphold.
- Definitions
  - Campus roof: The structure forming the upper covering of a campus building or parking deck
  - Roof access: Obtaining admittance to a campus roof through a door, hatch or other means
- Purpose for Policy: UNE Professional Staff and contractors must be aware of potential hazards associated with accessing campus roofs, and this policy has been developed to assist in mitigating those hazards.
- Roles and Responsibilities:
  - Environmental Health & Safety (EHS): Environmental Health & Safety Director and professional staff will assist Facilities Management in identifying hazards and reviewing incidents associated with accessing campus roofs. EHS is responsible for reviewing and updating the Roof Access Policy. EHS will develop and implement the Fall Protection Training associated with this policy.
  - Facilities Management Director and Managers: Facilities Management Director and Managers are responsible for identifying hazards and reviewing incidents associated with accessing campus roofs. It is the Facilities Management responsibility to make sure that Professional Staff who will be required to access campus roofs are properly trained on the Roof Access policy and other applicable policies upon employment and or prior to assignment. It is the supervisor's responsibility to ensure that their Professional Staff adhere to the requirements of this policy.
  - Facilities Management Professional Staff: It is the responsibility of all UNE's professional staff to adhere to the requirements of this policy, attend all trainings associated with this policy, ask question if the policy is not clear and report any conditions or actions that could impact adherence to this policy.
- Procedures:
  - Roof Access Authorization: Roof access is currently restricted to authorized professional staff and others that are issued a maintenance room key. Unauthorized professional staff may not access a roof unless accompanied by an authorized professional staff member.
    - Contractors will be given temporary authorization to access campus roofs for projects requiring roof work only after they have been advised of any hazards associated with the roof(s) they will have access to. Facilities Management will be responsible for informing contractors of specific potential hazards on the roofs where the work will occur.
    - Individuals with authorized access must not provide their ID badge, or key to anyone under any circumstances. Lost ID badges or keys must be reported immediately to the appropriate authorizing office to prevent any unauthorized use.
    - Unauthorized access is a violation of this policy and may violate other University policies or civil or criminal laws. Allowing unauthorized persons to access a roof will result in

revocation of access privileges and/or disciplinary action.

- General Roof Safety: Pre-plan all work including personal protective equipment (PPE) prior to the project by asking yourself the following questions:
  - What does this job require to complete?
  - What type of PPE will be needed?
  - Will fall protection be required?
  - Is there a partition or guardrail that is 42" +/- 3? If Yes, fall protection is not required. If No, fall protection is required.
  - Is a fall protection system already installed on the rooftop? If Yes, a personal fall arrest system consisting of a harness and lanyard or harness and self-retracting lifeline is required. If No, and it is a sloped roof, roof access is denied. If No, and it is a flat roof, a Controlled Access Zone must be established.
  - Unsure about fall protection? Contact Facilities Management Director, Facilities Managers or EHS Director.
- Pay attention to any posted safety signage at roof access point(s).
- If rooftop activities might generate dust or odors in the vicinity of building air intakes, contact EHS for project review.
- Assess work conditions— avoid or restrict roof access work when wet or windy weather conditions exist, especially after dark unless adequate illumination is available.
- Inspect site & equipment for:
  - Structural integrity of the roof surface to safely support heavy equipment/tools
  - Condition of equipment (protective fall restraint system, personal protective equipment, etc.)
  - Potential insects/ pest problems on the roof (e.g., beehives, wasps, bird droppings, etc.)
  - For any roof safety concerns, contact Facilities Management Director, Facilities Managers or EHS Director.
- During Roof Work:
  - Ensure safety down below — for work being performed close to the roof's edge, demarcate and barricade the area(s) below to protect pedestrian from falling debris.
  - Pay extra attention to trip and slip hazards (i.e., standing water or equipment).
- Completion of Roof Work:
  - General housekeeping — Prior to leaving the roof, clean up and remove all tools/equipment, and materials.
  - Never leave any items on the rooftop that can be blown off by the wind.
  - Secure the roof access door and/or hatch to prevent unauthorized roof access.
- Fall Protection: Professional Staff accessing campus roofs must be aware of, received training for, and adhere to fall protection training requirements. A summary of some of the requirements are provided below:
  - Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems.
  - Each employee who is constructing a leading edge 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems.
  - Each employee on walking/working surfaces shall be protected from falling through holes (including skylights) more than 6 feet (1.8 m) above lower levels by personal fall arrest systems, covers, or guardrail systems erected around these areas.

- Each employee engaged in work activities on low-slope roofs, with unprotected sides and edges 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or a combination of warning line system and guardrail system, warning line system and safety net system, or warning line system and personal fall arrest system, or warning line system and safety monitoring system.
- Each employee on a steep roof with unprotected sides and edges 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems with toe boards, safety net systems, or personal fall arrest systems.
- **Ladder Use:** Some campus roofs are only accessible via fixed ladders. Professional staff must be familiar with the campus ladder policy. General safety requirements are:
  - Ladder side rails shall extend at least 3 feet above the point of support at eave, gutter, or roof line.
  - Always maintain 3 points of contact with the ladder (ex. Two hands and one foot, two feet and one hand).
  - Clean grease, mud or other slippery debris off shoes prior to climbing ladder.
  - Always face ladder when climbing up or down.
  - Never slide down a ladder.
  - Carry tools in pouch around waste and/or use rope to raise or lower large items to or from roof.
- **Environmental Conditions:** Professional Staff working on the campus roofs may be exposed to unfavorable weather conditions such as extreme heat or cold temperatures and snow or ice. Professional staff should:
  - Wear appropriate clothing. Choose lightweight, light-colored, loose-fitting clothing in hot conditions. Choose layers of loose-fitting, insulating and possibly waterproof clothes in cold conditions.
  - When working in the heat, stay hydrated by drinking small amounts of cool water frequently. Drink warm, sweetened liquids in the cold.
  - Monitor yourself and co-workers for symptoms of weather-related illness. Call 911 immediately if symptoms are observed.
- **Campus Roof Access Requiring Fall Protection**
  - Alford Center for Health Sciences
  - Assisi Hall
  - Avila Hall
  - Bush Center
  - Campus Center
  - Decary Hall
  - East Residence Hall
  - Facilities Management Building
  - Featherman Hall
  - Ketchum Library
  - Learning Assistance Center
  - Marine Science Education and Research Center
  - Morgane Hall
  - Padua Hall
  - Pickus Center for Biomedical

#### Research

- Siena Hall
- Champlain
- Stella Maris Hall
- Waste Water Treatment Plant
- West Residence Hall
- Harold Alfond Forum
- Sokokis Residence Hall
- University Commons

#### 4. Scaffolding:

- Use of scaffolding will comply with 29 CFR 1910. A detailed explanation can be found in the OSHA Safety and Health Standards, General Industry Section (available from EHS). The following are some of these requirements:
  - Footing or anchorage for scaffolds will be sound, rigid and capable of carrying the maximum intended load without settling.
  - Guard rails and toe-boards will be installed on all open sides and ends of platforms over 10 feet in height.
  - Guard rails will be of 2" x 4" lumber (minimum) approximately 42" in height.
  - Supports should be a minimum of 8 feet apart.
  - Toe-boards will be a minimum of 1"x4" lumber.
  - When work is required to be done or workers can pass under the scaffold, a wire mesh screen will be installed between the toe-boards and the guardrail or the area under the scaffold must be barricaded.
  - Scaffolds and their components will be capable of supporting at least four times the intended load. Platform planks will be 2" x 10" minimum.
  - All planked platforms will be overlapped 12" (minimum) or secured from movement.
  - Scaffold planks will extend over end supports between 6" and 12".
  - Scaffolds will be secured to buildings/structures at intervals not to exceed 30' horizontally and 26' vertically.
- Manually Propelled Mobile Scaffolds:
  - On free-standing towers, the height will not exceed four times the minimum base dimension.
  - All casters will be provided with a positive locking device.
- Guardrails, Handrails & Covers:
  - All floor openings, holes, open sided floors, platforms and runways where the danger of employees or material falling through exists, will be protected by a standard railing. Smaller floor holes will be protected by covers.
    - Covers: Floor holes may be guarded by a cover of standard strength and construction that is secured against accidental displacement. When the cover is not in place, the floor hole will be protected by a standard railing.
    - Standard Railing: A standard railing will consist of a top rail, an intermediate rail and a toe board.
  - Top Rail: the top rail will be of 2" x 4" (min.) lumber, 42" vertical height with vertical supports not more than 8 feet apart and must be capable of withstanding 200 lbs. Pressure with a minimum of deflection.
  - Middle Rail: The intermediate rail must be made of at least 1" x 6" lumber.
  - Bottom Rail (Toe-Board): the toe board must be 4" in height. It may be made of any substantial material.

#### 5. Hot work:

- The following procedures are to be used to control operations using flames or producing sparks, and to

provide better protection against fire from welding and other hot work in all buildings at UNE. Exempted areas include the automotive shop, outdoors, maintenance shop, or boiler rooms. All hot work jobs require a fire watch:

- A Hot-Work Notification form will be used as a means to document hot work operations and to notify effected personnel, and the department of Safety and Security. This form must be completed prior to the start of work. A copy of the Notification form will be submitted to EHS and Security once work is completed.
- The employee and his assistant will check the work area for smoke and heat detectors. If smoke and/or heat detectors are present the employee will notify the Department of Safety and Security and inform them of the location of the work area and that there is a possibility of an alarm activation in that location.
- "Caution-Work Area" floor signs will be placed near the work area to inform the public of the hazard.
- The employee and assistant will check the work area to determine if the following precautions to prevent fire have been taken:
  - All flammable and combustible materials removed from the work area.
  - All floor openings covered to prevent sparks and other hot debris from entering the openings.
  - Carpets covered with a fire resistive blanket to protect them from sparks and other hot debris from burning them.
  - The employee will begin the job. The assistant will standby with a fire extinguisher to ensure fire safety and keep all unauthorized persons from entering the hot-work area.
  - Upon completion of the hot-work assignment, the employee and his assistant will inspect the area for signs of fire, smoke, or smoldering in the hot-work area.
  - After the hot-work area is deemed safe from fire, the employee will contact the Department of Safety and Security to inform them that the job has been completed.
  - The employee or his assistant will remove all equipment and floor signs from the work area.
  - Fire extinguishers that were used will be returned to the stockroom for recharging or servicing.
- The employee will turn in the Hot-Work Notification from at the end of the day to their supervisor, who will file all permits for record purposes.

#### **6. Drilling and Blasting:**

- Drilling:
  - In no case will drilling be started in the bootleg of a previous hole.
  - The operator of a drilling machine will be supplied with and will use a hard hat, hearing protection and eye protection.
  - Dust controlling measures will be provided for both the operator and the immediate area.
  - All air lines between compressor and air drill will be equipped with safety fasteners at all couplings.
- Blasting: All blasting performed at UNE will be done by a licensed and certified contractor. All UNE employees will follow the written procedure of the contractor.

#### **7. Trenching and Excavating:**

- At times it is necessary to excavate or trench areas on campus. All trenching operations will be conducted by staff or contractors.
- Hazard Removal: All surface impediments that are located so as to create a hazard to employees will be removed or supported, as necessary, to protect employees.
- Underground Utilities: should estimate location impact underground utilities, effected utility companies will be contacted, advised of the proposed work, and asked to establish the location of the underground utility prior to the start of actual excavation. If the utility company cannot respond or the exact location of the utilities cannot be

established, the contractor may proceed after using detection equipment.

- Dig-Safe: Dig-Safe (1-800-225-4977) must be called 72 hours before digging.
- Egress: If a trench or excavation is four or more feet in depth, then a means of egress (stairways, ladders or ramps) will be located so that there is no more than 25 feet of travel to the means of egress.
- Exposure to Vehicle Traffic:
  - Employees will be provided with and will wear warning vests.
- Exposure to Falling Loads:
  - No employee will be permitted under loads handled by loading or digging equipment.
- Confined space entry: See Section 5 for confined space entry requirements.
- Water Accumulation:
  - Employees will not work in excavations in which there is accumulated water or in which water is accumulating, unless steps have been taken to protect the employees from hazards posed by water accumulation.
- Undermining:
  - Sidewalks, pavements or structures will not be undermined unless a support system or other method of employee protection is provided.
- Excavated Material:
  - Excavated material must be placed at least two feet from the edge of the excavation.
- Inspections:
  - Daily inspections of excavations and the surrounding areas will be made by a competent person before the start of work for evidence of possible cave-ins, failure of the protection system, hazardous atmosphere or other conditions.
- Barricading:
  - All remotely located excavations will be barricaded. Upon completion of exploration or similar operations, the excavation will be back-filled immediately.
- Soils Classifications:
  - Stable Rock: Solid blasted ledge
  - Type A: Clay, sandy clay, clay loam, hardpan
  - Type B: Angular gravel, crushed rock, silt, loam, previously disturbed soils, dry rock that is not stable
  - Type C: Gravel, sand, submerged soil, wet soil
- Required Sloping of Walls to Provide Protection:
  - Stable Rock: Vertical
  - Type A:
    - 5-12 feet deep
    - Open less than 24 hours
    - Slope is 1/2: 1, decrease slope if signs of distress
  - Type B:
    - 5-20 feet deep
    - Open less than 24 hours
    - Slope is 1 1/2: 1, decrease slopes if signs of distress
  - Type C:
    - 5-20 feet deep
    - Open less than 24 hours
    - Slope is 1 1/2: 1, decrease slopes if signs of distress

## 8. Outdoor Safety:

### • **Fall/Winter: General Winter Safety**

- Employees will be taught the environmental and workplace conditions that lead to potential cold-induced illnesses and injuries such as hypothermia and frostbite so that they may be avoided.
- Employees will be taught the signs and symptoms of cold-induced illnesses/injuries and what to do to help those who are affected.
- Proper clothing will be selected and provided for cold, wet, and windy conditions.
- It is suggested that employees layer clothing to adjust to changing environmental temperature, wear a hat and gloves, in addition to a warm coat.
- Employees will take frequent short breaks in warm dry shelters to allow the body to warm up.
- Employees will be encouraged to perform work during the warmest part of the day if the need to be outside in cold conditions.
- Exhaustion and fatigue will be avoided because energy is needed to keep muscles warm.
- Employees are encouraged to use the buddy system (work in pairs).
- Employees should drink warm, sweet beverages (sugar water, sports-type drinks). Avoid drinks with caffeine (coffee, tea, or hot chocolate) or alcohol and eat warm, high-calorie foods like hot pasta dishes.
- Walking Safely on Snow and Ice
  - Employees will wear the proper footwear when walking on snow and ice. A pair of well insulated boots with good rubber treads is a must for walking during or after a winter storm.
  - When walking on an icy or snow-covered walkway, employees should take short steps and walk at a slower pace so they can react quickly to a change in traction.
  - Employees should be on the lookout for vehicles which may have lost traction and are slipping towards them and be aware that approaching vehicles may not be able to stop at crosswalks or traffic signals.
  - The Facilities Department is responsible for snow removal and salting/sanding in winter storms.
- Snow blower and Snow Removal Safety
  - Employees will be properly and thoroughly trained before attempting to do any work with the snow blower.
  - Before the snow blower is operated, the area that is to be cleared will be inspected. Debris and other obstacles the snow blower might strike or throw, as that may cause injury or damage to the snow blower will be removed.
  - The snow blower will be inspected before operation and any damage will be repaired and malfunctions corrected before operation. If an obstacle is hit while operating the snow blower, the engine will be stopped immediately, and checked for damage.
  - The snow blower will not be used when visibility is poor. Under conditions of poor visibility, there is a greater risk of striking an obstacle or causing injury.
  - The snow blower will not be used to clear snow from a gravel road or driveway, as rocks may be picked up and ejected.
  - The discharge chute will be adjusted to avoid hitting the operator, bystanders, windows, and other objects with ejected snow and employees should stay clear of the snow discharge chute while the engine is running.
  - The snow blower will not be used to remove snow from roofs.
  - The operator will understand the operations of all controls and be able to stop the machine in an emergency.
  - No one will be authorized to operate the snow blower without proper instruction. If people



suddenly appear in front of the snow blower while it is in operation, immediately release the auger and drive clutch levers to stop the snow blower and avoid possible injury from rotating auger blades,

- If the snow discharge chute becomes clogged, the engine will be stopped and use a wooden stock to unclog it. Hands will never be put into the snow discharge chute while the engine is running; serious personal injury could result.
- Refueling will occur in a well-ventilated area with the engine stopped. The fuel tank is not to be over filled, and the filler cap is to be closed securely after refueling.
- The engine will never be run in an enclosed or confined area, due to exhaust containing poisonous carbon monoxide gas that can cause loss of consciousness and may lead to death.
- The muffler will not be touched while it is hot.
- Any employee operating the snow blower will hold the handle firmly, and walk, not run and is required to wear suitable winter boots that resist slipping.
- Equipment will be in good operating condition with regular preventative maintenance.
- All guards and shields are to remain in place.
- Face, eye, and hearing protection may be required to operate the snow blower.
- Snow will never be cleared across the face of a slope; instead the operator will turn toward the down side, when turning on a sloped area.
- Hands, feet, and clothing will be kept away from the snow blower and discharge chute when the auger is turning.
- Appropriate clothing and footwear is required.

- **Spring/Summer**

- General Outdoor Safety when working in hot weather conditions: the combination of heat and humidity can be a serious health threat during the summer months. When working outside employees are at increased risk for heat related illness and must take the proper precautions. The following actions will be taken to ensure the employee's safety in the summer months:
  - Drinking small amounts of water frequently.
  - Wearing light-colored, loose-fitting, breathable clothing such as cotton.
  - Wearing long sleeves; tucking pant legs into socks or boots.
  - Wearing high boots or closed shoes that cover feet completely.
  - Wearing a hat.
  - Taking frequent short breaks in cool shade.
  - Eating smaller meals before work activity.
  - Avoiding caffeine and alcohol or large amounts of sugar.
  - Working in the shade when possible.
  - Finding out from health care provider if medications employee may be taking and heat don't mix.
  - Knowing that equipment such as respirators or work suits can increase heat stress.
  - Using tick repellants, but not on the face.
  - Showering after work. Washing and drying work clothes at high temperature.
  - Examining the body for ticks after work and removing any attached ticks promptly and carefully with fine-tipped tweezers by gripping the tick.
  - Apply a strong sunscreen on all exposed areas of the body.
- Heat Related Illness:
  - Workers will be trained of the dangers of heat-related illnesses, what causes them and what procedures are in place to prevent them.
  - Risk factors of heat related illness include but are not limited to high temperature and humidity, low fluid consumption, direct sun exposure (with no shade) or extreme heat, limited air movement

(no breeze or wind), physical exertion, use of bulky protective clothing and equipment, poor physical condition or ongoing health problems, some medications, pregnancy, lack of previous exposure to hot workplaces, and previous heat-related illness.

- If workers show any signs and symptoms of heat exhaustion, heat stroke, heat cramps, or heat rash, the employee should immediately discontinue their outdoor work and report back to their supervisor. The employee should seek medical attention if necessary.
- Such signs and symptoms may include: confusion, loss of consciousness, seizures, headaches, nausea, dizziness, weakness, irritability, thirst, heavy sweating, muscle pains, or skin rash.

#### **9. Interior Painting Safety:**

- Painting will be scheduled for dry periods in the fall or spring, when windows are more easily left open for ventilation if possible.
- Fresh air must be provided anywhere interior painting is taking place.
  - All doors and windows to the outside should be opened when painting (not to hallways).
  - Curtains and blinds should be pushed back so that there is nothing blocking the airflow to ensure cross-ventilation.
  - A box fan should be placed securely in the window blowing out to ensure air movement. The fan should not be pointed directly at someone else's space. The fan should be secured in the window frame so that it cannot fall out of the window. If it rains or snows, fan should be turned off and removed from the window to avoid an electrical shock hazard.
  - An air conditioning unit should not be substituted for the use of a fan.
  - In addition, bathroom/kitchen exhaust fans do not always vent out-of-doors and should not be relied upon to increase ventilation.
  - If fans cannot be used, make sure that rooms being painted have adequate cross-ventilation.
  - Windows should be kept wide-open, as weather permits, for about 2 to 3 days after painting to avoid unwanted exposure to paint vapors (and to return to acceptable indoor air quality). Fresh air should be supplied after painting.
- Provide advance notice to neighbors in adjacent units that painting is to begin.
- Employees should take frequent fresh air breaks while painting and avoid freshly painted rooms for 2 to 3 days, whenever possible. Individuals with breathing problems should be kept away from freshly painted rooms. An employee should leave painted areas if experiencing eye watering, headaches, dizziness, or breathing problems.
- All employees shall read and follow all the instructions and safety precautions on the label and not assume they already know how to use the product. The hazards may be different from one product to another and some ingredients in individual products may also change over time.
- Paint can directions will be followed for the safe cleaning of brushes and other equipment.
  - Latex paint usually cleans up with soap and water.
  - For alkyd paints, specific products may need to be used as listed on the label.
  - Never use gasoline to clean paint brushes, as it is extremely flammable.
    - Read the label to find out if the paint cleaner is flammable.
    - All flammable products should be used away from ignition sources such as water heaters, furnaces, electric motors, fans, and stored according to Hazardous Materials regulations.
- All workers must don the appropriate PPE depending on the substance being used. This could include but is not limited to:
  - respiratory protection,
  - gloves,
  - safety glasses,

- steel toed shoes,
- aprons.

**10. Exterior Painting Safety:**

- All ladder rules and regulations shall be adhered to when using ladders for exterior painting use (see ladder safety section of this document).
- Examine the outdoor area to be painted for bee/wasp/hornets nests and other potential hazards before beginning the painting process and remove any hazards that may cause a potential problem.
- Never paint outdoors in adverse weather conditions (thunderstorms, heavy rains, snow, etc).
- All workers must don the appropriate PPE depending on the substance being used. This could include but is not limited to:
  - respiratory protection,
  - gloves,
  - safety glasses,
  - steel toed shoes,
  - aprons, etc.
- Signage will be posted in areas of high foot traffic to warn that painting is taking place and “wet paint” signs will be utilized until paint is fully dried.

**SECTION 3.3**

**TRAINING AND RECORDKEEPING**

**1. Training:**

- All new hires in the Facilities Department will be required to review the contents of this section.

**2. Record Keeping:**

- The Department of Safety and Security will maintain copies of all Hot Work Permits for a period of one year.

**SECTION 4.0**

**FORKLIFT/POWERED INDUSTRIAL TRUCK SAFETY**

**1. Introduction:**

- All persons in all departments who operate a forklift or powered industrial truck shall adhere to all standards and rules set forth by OSHA and the University when operating the vehicle. All operators must attend the proper training and be licensed to operate the vehicle before use. Failure to obtain a license before use will result in disciplinary action.

**SECTION 4.1**

**RESPONSIBILITIES**

**1. Environmental Health and Safety Department:**

- Create policies and procedures for the operation of forklifts and powered industrial trucks as required by OSHA and update procedures as needed.
- Ensure all operators are properly licensed and trained before operation.
- Work with Supervisors to make certain all rules and regulations are being followed by operators and all accidents and incidents are reported properly.

**2. Supervisors:**

- Ensure all operators are trained and licensed to operate forklifts and industrial trucks before operation.
- Report and investigate all incidents and accidents involving forklifts and industrial trucks.
- Oversee daily use, operation, and maintenance of the vehicles and equipment.

**3. Employees:**

- Attend all required training and licensing courses before operating a forklift or powered industrial truck.
- Follow all rules, regulations, and inspection policies and procedures set forth by the UNE Safety Manual and the OSHA standard.
- Report any problems or defects with equipment immediately to Supervisor and make sure that equipment is marked “out of service”.

Report any accidents or incidents involving the forklifts and industrial trucks to your Supervisor and EHS and fill out the appropriate accident report documentation.

**SECTION 4.2**

**FORKLIFTS/POWERED INDUSTRIAL TRUCKS POLICIES AND PROCEDURES**

**1. Forklifts/Powered Industrial Trucks:**

- Approved trucks shall bear a label or some other identifying mark indicating approval by the testing laboratory.
- Modifications and additions which affect capacity and safe operation shall not be performed by the customer or user without manufacturer’s prior written approval. Capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly.
- If the truck is equipped with front-end attachments other than factory installed attachments, the user shall request that the truck be marked to identify the attachments and show the approximate weight of the truck and attachment combination at maximum elevation with load laterally centered.
- The user shall see that all nameplates and markings are in place and are maintained in a legible condition.

**SECTION 4.3**

**TRUCK OPERATIONS**

**1. General Truck Operations:**

The following rules must be abided by when operating any powered industrial trucks (including fork trucks).

- Trucks shall not be driven up to anyone standing in front of a bench or other fixed object.
- No person shall be allowed to stand or pass under the elevated portion of any truck, whether loaded or empty.
- Unauthorized personnel shall not be permitted to ride on powered industrial trucks. A safe place to ride shall be provided where riding of trucks is authorized.
- The employer shall prohibit arms or legs from being placed between the uprights of the mast or outside the running lines of the truck.
- When a powered industrial truck is left unattended, load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set. Wheels shall be blocked if the truck is parked on an incline.
- A powered industrial truck is unattended when the operator is 25 ft. or more away from the vehicle which remains in his view, or whenever the operator leaves the vehicle and it is not in his view.
- When the operator of an industrial truck is dismounted and within 25 ft. of the truck still in his view, the load engaging means shall be fully lowered, controls neutralized, and the brakes set to prevent movement.
- A safe distance shall be maintained from the edge of ramps or platforms while n any elevated dock, or platform or freight car. Trucks shall not be used for opening or closing freight doors.
- Brakes shall be set and wheel blocks shall be in place to prevent movement of trucks, trailers, or railroad cars while loading or unloading. Fixed jacks may be necessary to support a semitrailer during loading or unloading when the trailer is not coupled to a tractor. The flooring of trucks, trailers, and railroad cars shall be checked for breaks and weakness before they are driven onto.
- There shall be sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc.
- An overhead guard shall be used as protection against falling objects. It should be noted that an overhead

guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., representative of the job application, but not to withstand the impact of a falling capacity load.

- A load backrest extension shall be used whenever necessary to minimize the possibility of the load or part of it from falling rearward.
- Only approved industrial trucks shall be used in hazardous locations
- There will be no horseplay when using powered industrial trucks.
- A pre-operation visual inspection must be made of the truck before every use.
- Fire aisles, access to stairways, and fire equipment shall be kept clear.

## **2. Traveling**

- All traffic regulations shall be observed, including authorized speed limits.
- A safe distance shall be maintained approximately three truck lengths from the truck ahead, and the truck shall be kept under control at all times.
- The right of way shall be yielded to ambulances, fire trucks, or other vehicles in emergency situations.
- Other trucks traveling in the same direction at intersections, blind spots, or other dangerous locations shall not be passed.
- The driver shall be required to slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall be required to travel with the load trailing.
- Railroad tracks shall be crossed diagonally wherever possible. Parking closer than 8 feet from the center of railroad tracks is prohibited.
- The driver shall be required to look in the direction of, and keep a clear view of the path of travel.
- Grades shall be ascended or descended slowly.
- When ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load upgrade.
- On all grades the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface.
- Under all travel conditions the truck shall be operated at a speed that will permit it to be brought to a stop in a safe manner.
- Stunt driving and horseplay shall not be permitted.
- The driver shall be required to slow down for wet and slippery floors.
- Dock board or bridge plates, shall be properly secured before they are driven over. Dock board or bridge plates shall be driven over carefully and slowly and their rated capacity never exceeded.
- Elevators shall be approached slowly, and then entered squarely after the elevator car is properly leveled. Once on the elevator, the controls shall be neutralized, power shut off, and the brakes set.
- Motorized hand trucks must enter elevator or other confined areas with load end forward.
- Running over loose objects on the roadway surface shall be avoided.
- While negotiating turns, speed shall be reduced to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, the hand steering wheel shall be turned at a moderate, even rate.

## **3. Loading**

- Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads which cannot be centered.
- Only loads within the rated capacity of the truck shall be handled.
- The long or high (including multiple-tiered) loads which may affect capacity shall be adjusted.
- Trucks equipped with attachments shall be operated as partially loaded trucks when not handling a load.

- A load engaging means shall be placed under the load as far as possible; the mast shall be carefully tilted backward to stabilize the load.
- Extreme care shall be used when tilting the load forward or backward, particularly when high tiering.
- Tilting forward with load engaging means elevated shall be prohibited except to pick up a load. An elevated load shall not be tilted forward except when the load is in a deposit position over a rack or stack. When stacking or tiering, only enough backward tilt to stabilize the load shall be used.

#### **4. Defective equipment**

- If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition.
- Fuel tanks shall not be filled while the engine is running. Spillage shall be avoided.
- Spillage of oil or fuel shall be carefully washed away or completely evaporated and the fuel tank cap replaced before restarting engine.
- No truck shall be operated with a leak in the fuel system until the leak has been corrected.
- Open flames shall not be used for checking electrolyte level in storage batteries or gasoline level in fuel tanks.

#### **5. Maintenance of industrial trucks**

- Any power-operated industrial truck not in safe operating condition shall be removed from service. All repairs shall be made by authorized personnel.
- No repairs shall be made in Class I, II, and III locations.
- Those repairs to the fuel and ignition systems of industrial trucks which involve fire hazards shall be conducted only in locations designated for such repairs.
- Trucks in need of repairs to the electrical system shall have the battery disconnected prior to such repairs.
- All parts of any such industrial truck requiring replacement shall be replaced only by parts equivalent as to safety with those used in the original design.
- Industrial trucks shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts. Additional counter-weighting of fork trucks shall not be done unless approved by the truck manufacturer.
- Industrial trucks shall be examined before being placed in service, and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examination shall be made at least daily. Where industrial trucks are used on a round-the-clock basis, they shall be examined after each shift. Defects when found shall be immediately reported and corrected.
- Water mufflers shall be filled daily or as frequently as is necessary to prevent depletion of the supply of water below 75 percent of the filled capacity. Vehicles with mufflers having screens or other parts that may become clogged shall not be operated while such screens or parts are clogged. Any vehicle that emits hazardous sparks or flames from the exhaust system shall immediately be removed from service and not returned to service until the cause for the emission of such sparks and flames has been eliminated.
- When the temperature of any part of any truck is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the vehicle shall be removed from service and not returned to service until the cause for such overheating has been eliminated.
- Industrial trucks shall be kept in a clean condition, free of lint, excess oil, and grease. Noncombustible agents should be used for cleaning trucks. Low flash point (below 100 deg. F.) solvents shall not be used. High flash point (at or above 100 deg. F.) solvents may be used. Precautions regarding toxicity, ventilation, and fire hazard shall be consistent with the agent or solvent used.
- Industrial trucks originally approved for the use of gasoline for fuel may be converted to liquefied petroleum gas fuel provided the complete conversion results in a truck which embodies the features

specified for LP or LPS designated trucks. Such conversion equipment shall be approved and done to the manufacturer's specifications.

## SECTION 4.4

## TRAINING AND CERTIFICATION

### 1. Training:

- The employer shall ensure that each powered industrial truck operator is competent to operate a powered industrial truck safely, as demonstrated by the successful completion of the training and evaluation.
- Trainees may operate a powered industrial truck only under the direct supervision of persons who have the knowledge, training, and experience to train operators and evaluate their competence; and where such operation does not endanger the trainee or other employees.
- Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video tape, written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace.
- All operator training and evaluation shall be conducted by persons who have the knowledge, training, and experience to train powered industrial truck operators and evaluate their competence.
- Powered industrial truck operators shall receive initial training in the following topics, except in topics which the employer can demonstrate are not applicable to safe operation of the truck in the employer's workplace:
  - Truck Related Topics:
    - Operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate;
    - Differences between the truck and the automobile;
    - Truck controls and instrumentation: where they are located, what they do, and how they work;
    - Engine or motor operation;
    - Steering and maneuvering;
    - Visibility (including restrictions due to loading);
    - Fork and attachment adaptation, operation, and use limitations;
    - Vehicle capacity;
    - Vehicle stability;
    - Any vehicle inspection and maintenance that the operator will be required to perform;
    - Refueling and/or charging and recharging of batteries;
    - Operating limitations;
    - Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.
  - Workplace-related topics:
    - Surface conditions where the vehicle will be operated;
    - Composition of loads to be carried and load stability;
    - Load manipulation, stacking, and unstacking;
    - Pedestrian traffic in areas where the vehicle will be operated;
    - Narrow aisles and other restricted places where the vehicle will be operated;
    - Hazardous (classified) locations where the vehicle will be operated;
    - Ramps and other sloped surfaces that could affect the vehicle's stability;
    - Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust;
    - Other unique or potentially hazardous environmental conditions in the workplace that could affect

safe operation.

- Refresher training in relevant topics shall be provided to the operator when:
  - The operator has been observed to operate the vehicle in an unsafe manner;
  - The operator has been involved in an accident or near-miss incident;
  - The operator has received an evaluation that reveals that the operator is not operating the truck safely;
  - The operator is assigned to drive a different type of truck; or
  - A condition in the workplace changes in a manner that could affect safe operation of the truck.
  - An evaluation of each powered industrial truck operator's performance shall be conducted at least once every three years.

## 2. Certification

- The employer shall certify that each operator has been trained and evaluated as required by the OSHA Powered Industrial Truck Standard (29CFR1910.178)
- The certification shall include the name of the operator, the date of the training, the date of the evaluation, and the identity of the person(s) performing the training or evaluation.

## SECTION 5.0

## CONFINED SPACE ENTRY

### 1. INTRODUCTION

- This section is intended to provide guidance for preservation of life and health by identifying and rendering safe any confined spaces that may present a hazard to personnel. As with excavating and trenching, confined space entries may apply to Facilities Management personnel or contractors.

## SECTION 5.1

## RESPONSIBILITIES

### 1. Environmental Health and Safety Department:

- Evaluate potential and actual hazards of any confined space prior to entry as requested by Facilities Management.
- Assist supervisors in the issuance of Confined Space Entry Permits (available from EHS), defining required precautions for entry, listing the names of personnel permitted to enter, and specifying a valid time period for the permit.
- Provide or make available oxygen meters and/or toxic gas monitors where deemed necessary. (EHS maintains a limited supply of portable battery powered oxygen monitors). These are not suitable for extensive, continuous monitoring. Operations which require extensive, continuous monitoring should provide permanent AC powered monitors.
- Provide signs and/or placards for supervisors that identify each confined space.
- Assist supervisors in the identification of confined spaces (See Appendix U).
- Review entry operations to identify any concerns or deficiencies with the program that might fail, in order to protect employees and take steps to correct the problems found.
- Record any monitoring results as required on the permit in the appropriate location on the permit including the date and time the results were obtained. For continuous monitoring, record the initial entry results of monitoring and the results at subsequent entry periods (i.e. the beginning of each day of entry).
- Organize, train, and implement an internal emergency response team for rescue operations in the event that a rescue is needed in a confined space entry procedure.

### 2. Director of Facilities Management:

- Ensure that contractors that work in confined spaces comply with this section or under guidelines equivalent to this section.

### 3. Facilities Management Supervisors:



- Examine job requirements in order to plan work to avoid entry into confined spaces. Arrange to have as much work as possible performed outside the space. Confirm that individuals making entry have been properly trained in confined space entry.
- Approves the Confined Space Entry Permit and assure that all requirements of the permit are met. Verify that each individual requirement have been completed before entry into the confined space.
- Appoint and inform prospective entrants and their Safety Attendant about specific hazards, and ensure that all persons understand and have received training in any special safety procedures for that space including the use of prescribed personal-protective equipment and the emergency response procedures.
- If there are multiple entrances to the confined space, each entrance must be posted with a copy of the permit.
- Ascertain that all access procedures, system isolation requirements, and lock-out procedures as specified on the permit are completed in accordance with Section 9.
- Ensure that the Safety Attendant is instructed and understands his or her duties and that the Safety Watch has any required equipment, such as a portable radio, if needed.
- Cancel the Confined Space Entry permit by removing it from its posting upon completion of the job specified, or upon reaching the expiration date and time, and by returning the completed permit to EHS.

## **SECTION 5.2**

## **CONFINED SPACE POLICES AND PROCEDURES**

### **1. CONFINED SPACE POLICES AND PROCEDURES**

- No entry into a confined space will be made until the EHS and supervisor have evaluated the entry and have issued a Confined Space Entry Permit (See Appendix A).
- All confined spaces will be posted with a sign or label stating "Danger Confined Space, Do Not Enter" or similar language. These postings will be maintained so as to be in English and remain legible.
- The confined space will be monitored immediately prior to entry for any hazardous atmosphere that could potentially exist in the confined space at the time of entry.
- Before an employee enters the space, the internal atmosphere shall be tested, with a calibrated direct-reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order.
- Any employee who enters the space, or that employee's authorized representative, shall be provided an opportunity to observe the pre-entry testing required.
- Lack of a hazardous atmosphere will not be assumed, but will be tested and evaluated periodically, as deemed appropriate by EHS. This may include testing prior to entry, periodic testing, and/or continuous monitoring.
- If any meter or monitoring device should alarm, or a required ventilation system should fail while entrants are in the confined space, the confined space will be evacuated immediately, EHS will be notified immediately, and no further entry will take place until EHS has re-evaluated for potential hazards. If a meter alarm was due to anything other than a faulty meter, the present permit will be voided and a new permit will be required.
- When entrance covers are removed, the opening will be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.
- Pedestrian, vehicle, or other barriers will be put in place as necessary to protect entrants from external hazards.
- Continuous atmospheric monitoring will take place through-out the confined space occupancy.
- The following equipment will be provided by UNE for confined space entry at no cost to the employee:
  - Testing and monitoring equipment needed to monitor atmospheric levels.

- Ventilating equipment needed to obtain acceptable entry conditions.
- Communications equipment necessary for compliance with having an “attendant”.
- Personal protective equipment insofar as feasible engineering and work practice controls do not adequately protect employees.
- Lighting equipment needed to enable employees to see well enough to work safely and to exit the space quickly in an emergency.
- Barriers and shields, as required, will be provided for protection from outside fall hazards.
- Equipment, such as ladders, needed for safe ingress and egress by authorized entrants.
- Rescue and emergency equipment needed to comply with emergency section of the confined space entry standard.
- Any other equipment necessary for safe entry into and rescue from permit spaces.
- Planning Procedures for Pre-Entry to a Permit-Required Confined Space
  - Evaluate permit space conditions as follows when entry operations are conducted:
    - Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized to begin, except that, if isolation of the space is infeasible because the space is large or is part of a continuous system (such as a sewer), pre-entry testing shall be performed to the extent feasible before entry is authorized and, if entry is authorized, entry conditions shall be continuously monitored in the areas where authorized entrants are working;
    - Test or monitor the permit space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations.
    - When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.
    - Provide each authorized entrant or that employee's authorized representative an opportunity to observe the pre-entry and any subsequent testing or monitoring of permit spaces.
    - Reevaluate the permit space in the presence of any authorized entrant or that employee's authorized representative who requests that the employer conduct such reevaluation because the entrant or representative has reason to believe that the evaluation of that space may not have been adequate.
    - Immediately provide each authorized entrant or that employee's authorized representative with the results of any testing conducted.
    - Provide at least one attendant outside the permit space into which entry is authorized for the duration of entry operations.
    - If multiple spaces are to be monitored by a single attendant, include in the permit program the means and procedures to enable the attendant to respond to an emergency affecting one or more of the permit spaces being monitored without distraction from the attendant's responsibilities.
    - Designate the persons who are to have active roles (as, for example, authorized entrants, attendants, entry supervisors, or persons who test or monitor the atmosphere in a permit space) in entry operations, identify the duties of each such employee, and provide each such employee with the training.
    - The Attendant will summon rescue and emergency services, for rescuing entrants from permit spaces, for providing necessary emergency services to rescued employees, and for preventing unauthorized personnel from attempting a rescue. The Attendant may call upon the Supervisor or EHS for assistance in coordinating rescue and emergency efforts.
    - EHS will aid the Entry Supervisor with the preparation, issuance, use, and cancellation of entry permits.
    - The Entry Supervisor will coordinate entry operations when employees of more than one employer are working simultaneously as authorized entrants in a permit space, so that employees of one

employer do not endanger the employees of any other employer.

- The Entry Supervisor will work with EHS when closing off a permit space and canceling the permit when necessary for concluding the entry after entry operations have been completed;\
- EHS will review entry operations when there is reason to believe that the measures taken under the permit space program may not protect employees and revise the program to correct deficiencies found to exist before subsequent entries are authorized.
- EHS will review the permit space program, using the canceled permits retained within 1 year after each entry and revise the program as necessary, to ensure that employees participating in entry operations are protected from permit space hazards.
- EHS may perform a single annual review covering all entries performed during a 12-month period. If no entry is performed during a 12-month period, no review is necessary.

- Permit System

- Before entry is authorized, EHS shall document the completion of measures by preparing an entry permit (See Appendix A).
- Before entry begins, the entry supervisor identified on the permit shall sign the entry permit to authorize entry.
- The completed permit shall be made available at the time of entry to all authorized entrants or their authorized representatives, by posting it at the entry portal or by any other equally effective means; so that the entrants can confirm that pre-entry preparations have been completed.
- The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit.
- The entry supervisor shall terminate entry and cancel the entry permit when:
  - The entry operations covered by the entry permit have been completed
  - A condition that is not allowed under the entry permit arises in or near the permit space.
- EHS shall retain each canceled entry permit for at least 1 year to facilitate the review of the permit-required confined space program. Any problems encountered during an entry operation shall be noted on the pertinent permit so that appropriate revisions to the permit space program can be made.
- The entry permit that documents compliance with this section and authorizes entry to a permit space shall identify:
  - The permit space to be entered;
  - The purpose of the entry;
  - The date and the authorized duration of the entry permit;
  - The authorized entrants within the permit space, by name or by such other means as will enable the attendant to determine quickly and accurately, for the duration of the permit, which authorized entrants are inside the permit space;
  - The personnel, by name, currently serving as attendants;
  - The individual, by name, currently serving as entry supervisor, with a space for the signature or initials of the entry supervisor who originally authorized entry;
  - The hazards of the permit space to be entered;
  - The measures used to isolate the permit space and to eliminate or control permit space hazards before entry; NOTE: Those measures can include the lockout or tagging of equipment and procedures for purging, inerting, ventilating, and flushing permit spaces.
  - The acceptable entry conditions;
  - The results of initial and periodic tests performed, accompanied by the names or initials of the testers and by an indication of when the tests were performed;
  - The rescue and emergency services that can be summoned and the means (such as the equipment to use and the numbers to call) for summoning those services;

- The communication procedures used by authorized entrants and attendants to maintain contact during the entry;
- Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment, to be provided for compliance with this section;
- Any other information whose inclusion is necessary, given the circumstances of the particular confined space, in order to ensure employee safety; and any additional permits, such as for hot work, that have been issued to authorize work in the permit space.
- Duties of authorized entrants:
  - Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;
  - Properly use equipment while occupying the confined space.
  - Communicate with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space.
  - Alert the attendant whenever:
    - The entrant recognizes any warning sign or symptom of exposure to a dangerous situation
    - The entrant detects a prohibited condition
    - Exit from the permit space as quickly as possible whenever:
      - An order to evacuate is given by the attendant or the entry supervisor,
      - The entrant recognizes any warning sign or symptom of exposure to a dangerous situation,
      - The entrant detects a prohibited condition,
      - An evacuation alarm is activated.
- Duties of the Attendant:
  - Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
  - Be aware of possible behavioral effects of hazard exposure in authorized entrants.
  - Continuously maintains an accurate count of authorized entrants in the permit space and ensures that the means used to identify authorized entrants accurately identifies who is in the permit space.
  - Remains outside the permit space during entry operations until relieved by another attendant. NOTE: When the employer's permit entry program allows attendant entry for rescue, attendants may enter a permit space to attempt a rescue if they have been trained and equipped for rescue operations and if they have been relieved.
  - Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space.
  - Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions:
    - If the attendant detects a prohibited condition;
    - If the attendant detects the behavioral effects of hazard exposure in an authorized entrant.
    - If the attendant detects a situation outside the space that could endanger the authorized entrants.
    - If the attendant cannot effectively and safely perform all the duties required.
  - Summon rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards.
  - Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:
    - Warn the unauthorized persons that they must stay away from the permit space;
    - Advise the unauthorized persons that they must exit immediately if they have entered the permit

space.

- Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space;
- Performs non-entry rescues as specified by the employer's rescue procedure;
- Performs no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.
- Duties of Entry Supervisors
  - Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
  - Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
  - Terminates the entry and cancels the permit if necessary.
  - Verifies that rescue services are available and that the means for summoning them are operable.
  - Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations.
  - Determines, whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space, which entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.
- Rescue and Emergency Services
  - UNE utilizes local emergency services for emergency/rescue situations. However, if EHS designates and trains rescue and emergency services, they shall:
    - Evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified;
    - Evaluate a prospective rescue service's ability, in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified;
    - Select a rescue team or service from those evaluated that:
      - Has the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified;
      - Is equipped for and proficient in performing the needed rescue services;
      - Inform each rescue team or service of the hazards they may confront when called on to perform rescue at the site.
      - Provide the rescue team or service selected with access to all permit spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.
  - If EHS allows employees to be designated to provide permit space rescue and emergency services they shall take the following measures:
    - Provide affected employees with the personal protective equipment (PPE) needed to conduct permit space rescues safely and train affected employees so they are proficient in the use of that PPE, at no cost to those employees;
    - Train affected employees to perform assigned rescue duties. The employer must ensure that such employees successfully complete the training required to establish proficiency as an authorized entrant.
    - Train affected employees in basic first-aid and cardiopulmonary resuscitation (CPR). The employer shall ensure that at least one member of the rescue team or service holding a current certification in first aid and CPR is available.

- Ensure that affected employees practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.
  - To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. Retrieval systems shall meet the following requirements:
    - Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head, or at another point which the employer can establish presents a profile small enough for the successful removal of the entrant. Wristlets may be used in lieu of the chest or full body harness if the employer can demonstrate that the use of a chest or full body harness is infeasible or creates a greater hazard and that the use of wristlets is the safest and most effective alternative.
    - The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet (1.52 m) deep
    - If an injured entrant is exposed to a substance for which a Safety Data Sheet (SDS) or other similar written information is required to be kept at the worksite, that SDS or written information shall be made available to the medical facility treating the exposed entrant.
- **Special Conditions:**
  - Contractors performing work involving Permit-Required Confined Spaces must be informed that such spaces exist and may be entered only through compliance with the OSHA standard. Contractors will inform EHS of their own training and permit program to be used by submitting a copy of their written program approval. Prior to entry outside contractor personnel will be thoroughly briefed by EHS on the known or expected hazards of the confined space(s) which might be entered. Prior to entry, EHS will review all confined space entry permits that are utilized by outside vendors on our premises.

**SECTION 5.3**

**TRAINING AND RECORDKEEPING**

**1. Training:**

- Training shall be provided to each affected employee:
  - Before the employee is first assigned duties under the confined space entry program
  - Before there is a change in assigned duties;
  - Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained;
  - Whenever the employer has reason to believe either that there are deviations from the permit space entry procedures required by the confined space entry program or that there are inadequacies in the employee's knowledge or use of these procedures.
- The training shall establish employee proficiency in the duties required by this program and shall introduce new or revised procedures.
- The employer shall certify that the training required been accomplished. The certification shall contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification shall be available for inspection by employees and their authorized representatives.

**2. Record Keeping:**

- All records of entry will be maintained by EHS for a minimum of three years and will available upon Request.

## SECTION 6.0

## ELECTRICAL PROTECTION PROGRAM

### 1. Introduction

- Almost every workplace has a source of electrical power. If electrical energy is used improperly, electrical shock and injury may result. With the knowledge of a few basic guidelines, most people can avoid electrical hazards. This section is designed to protect those who may be exposed to electrical hazards from working on, near, or with any appliance or piece of equipment that uses electricity, either energized or de-energized.

## SECTION 6.1

## RESPONSIBILITIES

### 1. Environmental Health and Safety:

- Create policies and procedures pertaining to Electrical Safety.
- Review policies and procedures annually or as needed and revise as necessary.
- Provide training programs on Electrical Safety for employees.
- Provide the necessary PPE for electrical work in hazardous conditions.

### 2. Employees

- Become familiar with policies and procedures
- Attend all mandatory training sessions
- Adhere to all safety policies and procedures pertaining to Electrical Safety.
- Report any problems or suggestions with policies and procedures to EHS.
- Wear all personal protective equipment required for activities with exposure to electrical hazards.

## SECTION 6.2

## ELECTRICAL PROGRAM POLICIES AND PROCEDURES

### 1. General Electrical Equipment Safety:

- Do not raise or lower equipment using the cord or carry tools/equipment by the cord.
- Do not damage the equipment's casing or the cord's insulation.
- Check cord for defects prior to use.
- Remove damaged or inoperative equipment from service immediately, attach a "do not use" or similar tag and notify your department head or supervisor.
- Personally owned portable electrical equipment must be approved by Facilities Management prior to use.
- Use of extension cords may only be utilized **temporarily** unless approved.
- Maintain three foot (minimum) work space in the direction of the live parts around all breaker panels, distribution panels, motor control centers, motor starters and disconnects. The width of the work space should be 30 inches or the width of the equipment, whichever is greater.
- Assume that all overhead wires are energized at lethal voltages. Never assume that a wire is safe to touch even if it is down or appears to be insulated.
- Never touch a fallen overhead power line. Call the electric utility company to report fallen electrical lines.
- Do not connect too many pieces of equipment to the same circuit or outlet as the circuit or outlet could become overloaded.
- Power strips, such as those used on computers, should be *plugged directly into outlets and not into extension cords or other power strips*.
- Grasp the plug to remove it from a socket, never pull the cord.
- Keep all cords away from heat, oil, water and sharp edges.

- Always unplug electrical appliances before attempting any repair or maintenance.
- Keep cords out of the way of foot traffic so they don't become tripping hazards or become damaged by traffic. If this is unavoidable, tape the cord to floor in order to negate the tripping hazard.
- Never use electrical equipment in wet areas or run cords across wet floors.
- Always use ladders made of wood or other non-conductive materials when working with or near electricity or power lines.
- NEVER work on live electrical equipment. ALWAYS de-energize before conducting work or maintenance of any kind.
- Grounding Equipment:
  - Use cords with 3 prong plugs. The continuity of the grounding conductor may not be disrupted by cutting off the third prong or by using adapters, attachment plugs, receptacles, etc.
  - Work Locations that contain Conductive Liquids:
    - Employees must use ground fault interrupters, (GFI's either extension cords or receptacles) when working with portable electrical equipment in areas that are flooded or where contact with conductive liquids is likely (pools, basements, man-holes, labs).
    - Any outlet that is serviced by a GFI circuit breaker will be marked as such.
- Testing:
  - The following tests will be performed on all 120 volt, single phase 15 and 20 ampere cord sets, receptacles which are not part of the permanent wiring of the building or structure, and cord and plug connected equipment required to be grounded:
    - All equipment grounding conductors will be tested for continuity and will be electrically continuous.
    - Each receptacle and attachment cap or plug will be tested for correct attachment of the equipment grounding conductor which will be connected to its proper terminal.
    - Cord sets and temporary receptacles will be tested for correct polarity.
  - All required tests will be performed:
    - Before first use.
    - When equipment is repaired.
    - When equipment is reasonably suspected to have been damaged.
- Test Equipment:
  - All receptacles, cord sets and cord and plug connected equipment, will be tested in the following manner:
    - If in service, tested with a circuit tester.
    - If not service, tested with continuity tester.
- Test Verification:
  - Tests will be documented and maintained for a minimum of three years.
- Personal Protective Equipment:
  - Faculty and Staff will be provided with and will wear all personal protective equipment that is appropriate for their work as defined by EHS. This may include but is not limited to: arc flash protecting hoods/face shields/overalls, insulated gloves/sleeves, leather gloves, arc flash protecting eyewear, etc. This equipment must be inspected and tested by a reputable vendor with proper training to assess the equipment.
  - Testing and Inspection. Gloves and sleeves must be electrically tested before being issued for use. They must also be visually inspected and gloves need to be air tested for any possible defects (for example, cuts, holes, tears, embedded objects, changes in texture) before each day's use and whenever there is a reason to believe they may have been damaged. Best practice is to inspect PPE and air test the gloves



and sleeves before each use.

- Insulating equipment may not be used if any of the following defects are present: holes, tears, punctures or cuts, ozone cutting or ozone checking, embedded foreign objects, texture changes, including swelling, softening, hardening, or becoming sticky or inelastic, and any other defect that damages the insulating properties.
- Insulating equipment failing to pass inspection must be removed from service and may not be used by workers. In addition, the gloves and sleeves must be electrically tested at regular intervals of not more than 6 months for gloves and 12 months for sleeves. When gloves and sleeves are used regularly, best practice is to test as frequently as monthly.
- Protector Gloves and Storage.
  - To ensure worker safety and the integrity of the gloves and sleeves, insulating gloves need to be worn along with protector gloves (such as leather), and both insulating gloves and sleeves need to be stored properly when not in use.
  - Proper storage means that gloves must not be folded and need to be kept out of excessive heat, sunlight, humidity, ozone, and any chemical or substance that could damage the rubber.

- Using Tools:

When working near exposed, energized parts, employees will only use insulated tools and handling equipment such as the following:

- Tools that are in good repair, double insulated, grounded.
- The insulating material must be protected from damage.
- Insulated, fuse handling equipment (when working with energized fuses).
- Nonconductive ropes and hand-lines (caution--wet ropes are conductive)
- Protective, insulated shields/barriers
- Wooden or Fiberglass ladders will be used if work requires the use of a ladder around electrical equipment. All metal ladders should be marked, CAUTION: DO NOT USE AROUND ELECTRICAL EQUIPMENT.
- Switch tools OFF before connecting them to a power supply.
- Disconnect power supply before making adjustments.
- Ensure tools are properly grounded or double-insulated. The grounded tool must have an approved 3-wire cord with a 3-prong plug.
- Test all tools for effective grounding with a continuity tester or a ground fault circuit interrupter (GFCI) before use.
- Do not bypass the switch and operate the tools by connecting and disconnecting the power cord. Do not use electrical tools in wet conditions or damp.
- Do not clean tools with flammable or toxic solvents.
- Do not operate tools in an area containing explosive vapors or gases, unless they are intrinsically safe and only if you follow the manufacturer's guidelines.

- Alerting Techniques:

Use the following to warn and protect everyone from electrical hazards:

- Signs and tags (refer to Section 9 Lock Out/Tag Out)
- Nonconductive barricades and signs to limit access.
- Guards, if the above will not provide adequate protection.

- House Keeping:

- A neat, clean work space is essential where work on electrical equipment is to take place. Spaces behind and under consoles or power supplies should never be used for storage, and always be kept clear of rubbish or unnecessary equipment.

- Electrical Panels:

- Access is restricted to authorized personnel only.
- Panels will have the function of each switch, circuit breaker, or fuse typed or printed clearly on the panel door interior.
- Panels will not be left unattended if opened for service.
- A three foot (minimum) work space around all breaker panels, distribution panels, motor control centers, motor starters and disconnect will be maintained. No equipment, machinery, or supplies are to be stored in front of electric panels.
- Ensure the appropriate signage is in place and all electrical panels are marked without being defaced or damaged in any way.

**SECTION 6.3**

**TRAINING**

**1. Training:**

- All new hires will be required to review the contents of this section.
- Any Facilities employee whose job may change to include electrical work shall review the contents of this section and follow all rules/regulations within.

**SECTION 7.0**

**RESPIRATORY PROTECTION PROGRAM**

**1. Introduction**

- 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.”

**SECTION 7.1**

**RESPONSIBILITIES**

**1. UNE Environmental Health and Safety Department or EHS:**

- Develop and implement a written respiratory protection program within the OSHA 1910.134 guidelines.
- Provide a questionnaire and medical examination to the employee before approving respirator use for that employee
- Provide NIOSH approved respiratory protection for employees.
- Assign a Program Administrator to regulate the respiratory protection program to insure it is being followed properly.
- Revise the Respiratory Protection program annually or as needed.
- Recordkeeping of all information contained under the Respiratory Protection Program except medical information, which is retained by the Human Resources Department.
- Perform air quality testing if requested by an employee or if there is an area of concern that needs to be addressed.

**2. Program Administrator:**

- Provide training to employees on the Respiratory Protection Program.
- Review sanitation/storage procedures for effectiveness and compliancy;
- Ensure respirators are properly stored, inspected and maintained on a regular basis;
- Monitor compliance for this program and update annually and as needed;
- Provide adequate fit testing of respiratory protection in accordance with the Respiratory Protection Plan

and OSHA guidelines.

### **3. Employee:**

- Report any areas to EHS for evaluation that may require respiratory protection.
- Submit to a medical questionnaire and a medical examination to determine if the employee is eligible to participate in the Respiratory Protection Program.
- Submit to a respirator fit testing for each type of respirator that may be used.
- Adhere to all policies and procedure contained in the Respiratory Protection Program set forth by UNE.
- The employee is responsible for cleaning, disinfecting, storing, inspecting, repairing, and discarding and generally maintaining their respirators and notifying their Supervisor or EHS if new equipment is needed.

### **4. Designated Occupational Health Care Provider**

- Perform all medical examinations pertaining to the Respiratory Protection Program
- Review the Medical Questionnaire and address any concerns with the employee
- Make recommendations to the employee and the EHS department based on the employee's medical evaluation and Medical Questionnaire and approve the employee to participate in the Respiratory Protection Program or address any concerns that would prevent the employee from being able to participate in the program.
- Conduct follow up examinations as requested.

### **5. Human Resources**

- Work with Occupational Health Care Provider to have Respiratory Questionnaires evaluated by a physician and the results forwarded to Human Resources to be kept in the employee's confidential personnel file.
- Notify EHS if any individual fails the Respiratory Questionnaires and is subsequently not able to participate in UNE's Respiratory Protection Program.
- Notify EHS of any restrictions given by the physician for employees that are part of UNE's Respiratory Protection Program.

## **SECTION 7.2**

## **RESPIRATORY PROTECTION PROGRAM POLICIES AND PROCEDURES**

### **1. Respiratory protective devices will be used:**

- For activities that cannot be safely or practically controlled by engineering methods or procedural alteration, such as for asbestos abatement activities, pesticide applications, spray painting, etc. Engineering controls are to be used if possible before resorting to respiratory protection.
- When working in confined spaces and is required for certain atmospheres.
- When airborne radioactive chemicals, toxic materials, or hazardous chemicals could exceed OSHA Permissible Exposure Limits (PEL's) or Time Weighted Average's (TWA's) or whenever an employee will come in contact with harmful dusts, fogs, fumes, mists, gases, smokes, sprays or vapors.
- When requested for additional protection.
- In emergency situations where respiratory protection is required.

### **2. Respirator Selection:**

- Respirators will be selected based on the type of hazards to which the worker is exposed and workplace or user factors that affect respirator performance and reliability. All selections will be made by EHS based on the recommendations from the Chemical Hygiene Officers (CHO) in the lab areas. EHS will make recommendations for use of respiratory protection for other staff members such as the Facilities Department. Only MSHA/NIOSH-certified respirators that meet ANSI 288. 2 - 1980 will be used in compliance with the conditions of their certifications.
- EHS and CHO's will identify and evaluate respiratory hazards in the workplace by looking at the following items:
  - Type of hazardous substance that employee is exposed to.

- Form of the hazardous substance ie) liquid, gas, smoke, vapor, etc.
- Amount of the hazardous substance the employee is exposed to.
- Duration of time the employee will be exposed to the substance.
- Other engineering controls or ventilation systems in place.
- Conducting air monitoring of area for OSHA PEL's if needed.

NOTE: Any area where the employer cannot identify or reasonably estimate the hazard will be considered IDLH (Immediately Dangerous to Life or Health) and the equipment will be selected accordingly.

- EHS will provide a respirator that coincides with OSHA regulations and that is adequate to protect the employee from the hazard they are exposed to.
- EHS will use Assigned Protection Factors (APF's) listed in Table 1 under 1910.134 (d) (3) (i) (a) of the OSHA Respiratory Protection Standard to make sure the respirators meet or exceed level of protection needed. Also see Appendix F for respirator types and APF's.

Table 1. -- Assigned Protection Factors<sup>5</sup>

Type of respirator <sup>1, 2</sup>	Quarter mask	Half mask	Full facepiece	Helmet/ hood	Loose-fitting facepiece
1. Air-Purifying Respirator	5	<sup>3</sup> 10	50	.....	.....
2. Powered Air-Purifying Respirator (PAPR)	.....	50	1,000	<sup>4</sup> 25/1,000	25
3. Supplied-Air Respirator (SAR) or Airline Respirator					
• Demand mode	.....	10	50	.....	.....
• Continuous flow mode	.....	50	1,000	<sup>4</sup> 25/1,000	25
• Pressure-demand or other positive-pressure mode	.....	50	1,000	.....	.....
4. Self-Contained Breathing Apparatus (SCBA)					
• Demand mode	.....	10	50	50	.....
• Pressure-demand or other positive-pressure mode (e.g., open/closed circuit)	.....	.....	10,000	10,000	.....

**Notes:**

<sup>1</sup>Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.

<sup>2</sup>The assigned protection factors in Table 1 are only effective when the employer implements a continuing, effective respirator program as required by this section (29 CFR 1910.134), including training, fit testing, maintenance, and use requirements.

<sup>3</sup>This APF category includes filtering facepieces, and half masks with elastomeric facepieces.

<sup>4</sup>The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.

<sup>5</sup>These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 29 CFR 1910 subpart Z, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by 29 CFR 1910.134 (d)(2)(ii).

Example for calculating APF:  $\text{Concentration} = \frac{300 \text{ mg/M}_3}{\text{PEL(TWA}_8\text{)}} = 50 \text{ mg/M}_3 = \text{A hazard ratio of } 6 \text{ for } 8 \text{ hr TWA}$

- EHS will select respirators of varying models and sizes so the respirator is comfortable and fits the user correctly.
- EHS will provide a full face piece pressure demand SCBA certified by NIOSH for a minimum of 30 minutes of service life or a full face pressure demand air respirator with self-contained air supply for any IDLH situation. Oxygen deficient atmospheres are also considered IDLH.
- For protection against gases or vapors the following will be provided:
  - An atmosphere-supplying respirator or
  - An air purifying respirator
 NOTE: Each device should be equipped with an ESLI or end of life service indicator, if one is not equipped with an ESLI, the EHS will have a change schedule in place for changing canisters or cartridges.
- For protection against particulates, the following will be provided:
  - An atmosphere supplying respirator or
  - An air purifying respirator with a filter certified by NIOSH as a high efficiency particulate air (HEPA) filter or equipped with a filter certified for particulates by NIOSH under 42CFR part 84.

### **3. Medical Surveillance:**

- Persons will not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. All employees required to wear respirators will be enrolled in the medical surveillance program and be required to go to the off-site designated medical facility chose by the University to receive medical clearance prior to respirator use. Medical certification for respirator use will be re-evaluated annually. When the employee is no longer using respiratory protection, medical surveillance will no longer be required. All medical evaluations will be provided at no cost to the employee.
- The employee will be required to fill out a detailed medical questionnaire (see Appendix C for example of the Medical Questionnaire set forth by OSHA) and complete a medical evaluation at no cost to the employee. The medical questionnaire will be confidential and will have the right to go over the questionnaire and results of the physical exam with the physician.
- The following information will be given to the physician before they approve respirator use for the employee:
  - Type and weight of respirator to be used
  - Duration and frequency of respirator use
  - Expected physical work effort
  - Additional PPE and clothing to be worn
  - Any extreme temperatures or humidity extremes that may be encountered\
  - A copy of the Respiratory Protection Program

### **4. Medical Determination:**

- In determining whether the employee is eligible to participate in the Respiratory Protection Program, EHS will:
  - Obtain a written recommendation from the health care professional with the following information:
    - Any limitations related to respirator use or whether the employee is able to use respiratory protection.
    - If there is a need for any follow-up medical evaluations.
    - A written recommendation from the health care professional with their written consent or denial of the employee to participate in the program or any stipulations that may be in place to due to medical restrictions.

### **5. Additional Medical Evaluations:**

- Additional medical evaluations and follow-up appointments may be required under the following circumstances:
  - The employee reports concerning signs or symptoms related to respirator use.
  - The health care provider, the employee's supervisor, or the program administrator feels that the employee needs to be re-evaluated.
  - Information obtained during the fit testing process indicates the employee needs to be re-evaluated.
  - Changes occurring in the workplace may result in more of a physiological burden on the employee or duration of use of respirators is dramatically increased.

#### **6. Fit-testing:**

- All campus personnel required to use respiratory protection equipment (except for disposable dust/mist single use masks) must undergo and pass a qualitative fit test prior to use of the equipment. The employee must be fit tested using the exact size and exact model that they will be using in the field on a regular basis. Employees are required to do a seal check every time they put on the respirator. If the employee shows any signs of breathing difficulty during fit testing, discontinue fit testing and bring to a health professional. See Appendix B for example of fit testing form.

- Procedures for Fit Testing:

For specific fit testing requirements, please reference OSHA 29CFR [1910.134 App A](#).

- Assessment of comfort shall include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:
  - Position of the mask on the nose
  - Room for eye protection
  - Room to talk
  - Position of mask on face and cheeks
- The following criteria shall be used to help determine adequacy of the respirator fit:
  - Chin properly placed
  - Adequate strap tension, not overly tightened.
  - Fit across nose bridge
  - Respirator of proper size to span distance from nose to chin.
  - Tendency of respirator to slip
  - Self-observation in mirror to evaluate fit and respirator position
- Qualitative Fit Testing. Qualitative fit testing will be performed in the following manner:
  - Positive-pressure check- with the exhaust port(s) blocked, the positive pressure of slight exhalation should remain constant for several seconds.
  - Negative-pressure check- with intake port(s) blocked, the negative pressure of slight inhalation should remain constant for several seconds.
  - Stannous Chloride irritant smoke, Isoamyl Acetate, Bitrex, or Saccharin test.
    - The employee will be instructed to close his/her eyes and breathe normally during the test.
    - The chosen test solution ampule is puffed/dispersed around the entire face/cartridge seal to determine the integrity of the mask/face seal.
    - In normal standing position, without talking, the subject will breathe normally for at least one minute.
    - In the normal standing position, the subject performs deep breathing for at least one minute, pausing so as not to hyperventilate.
    - Standing in place, the subject will slowly turn his/her head from side to side between the extreme positions to each side. The head will be held at each extreme position for at least 5 seconds.
    - Standing in place, the subject will slowly move his/her head up and down between the extreme

position straight up and the extreme position straight down. The head should be held at each extreme position straight down. The head should be held at each extreme position for at least 5 seconds.

➤ Reading of a chosen passage.

○ Restrictions:

- Facial hair between the skin and face mask sealing surface can interfere with the fit or operation of a half mask if it extends under the face piece sealing the area. If this condition exists, no attempt will be made to fit test such employee under any circumstances. The hair obstruction must be removed before the employee will be approved for fit testing and respirator use.
  - If for any reason an individual is unable to obtain a satisfactory face piece seal when presented with a variety of sizes and models of respirators, that individual will not be assigned or allowed to engage in any task requiring suitable respiratory protection.
  - If the employee wears corrective lenses glasses or goggles, or other PPE, it must be confirmed that they do not interfere with the seal of the face piece.
- Additional Fit Testing. Additional fit testing will be required if the employee, employer, or health care professional notices any of the following differences in the employee including but not limited to: facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.
  - After being fit tested successfully and the employer, employee, or program administrator find that the fit is unacceptable in the field, the employee has the right to re-select a different size and/or model of respirator and be fit tested and fitted with that equipment.

**7. Types of Respirators and Operating Procedures (See Appendix F for diagrams and APF):**

• Dust Masks:

- Dust Masks of various kinds, including disposable types, have been approved against low concentrations of certain dusts (nuisance dust, pollen, animal dust, etc only). Contact the EHS prior to using a dust mask.
- Discard a disposable dust mask after use or when breathing becomes difficult. If the dust mask has a replaceable dust filter, replace the filter with a new one when normal breathing becomes difficult.

• Air-Purifying Half –Mask Respirators:

- Half-mask respirators are the most widely used types of respirators. Each half-mask face piece is normally equipped with High Efficiency Particulate Air (HEPA) filter elements, or vapor and gas removing cartridges. These cartridges purify the air as the wearer breathes. HEPA filters protect against low concentrations of radioactive and toxic particulates. Vapor or gas removing cartridges protect against low concentrations of organic vapors and/or acid gas vapors.
  - Since this type respirator does not supply air, it cannot be used in oxygen-deficient atmospheres, in Immediately Dangerous to Life or Health (IDLH) atmospheres, or in confined spaces. It can only be used for protection against the contaminants listed on the cartridge. It cannot be used against natural gas or vapors with poor olfactory warning properties. The wearer should leave an area immediately if he or she detects an odor inside the mask or if the breathing resistance increases.
- The Half-mask sealing area; Procedure to put on and adjust a half-mask:
  - Use the mask approved for use.
  - Hold the mask so narrow nose-cup points upward.
  - Grasp both lower mask straps and hook them behind the neck.
  - Grasp both top straps and hook them behind the head and above the ears for a proper fit.
  - Adjust the straps so the fit is snug but comfortable.
  - Check for leaks when possible by covering the filter elements with the palms of the hands and inhaling gently. If the mask pulls in toward the face, the fit is good. This is known as a negative fit

check.

- Full Face-Mask Respirators:

- Full face-mask respirators provide more protection than half-masks because their shape allows a better mask-to-face seal. They also protect the eyes from irritating chemicals or particulate atmospheres. Full face-masks come equipped with selective types of air-purifying canisters/cartridges, dependent upon the protection required. Additionally, full face-masks are available with air-supplied systems such as air lines or SCBA units.
- Air-purifying full face-masks have the same limitations for use as half-mask respirators. Additionally, standard eyeglasses interfere with the mask-to-face seal; therefore, respirator wearers should obtain an additional pair of glasses for installation into the mask.
- Procedure to put on a full face-mask:
  - Loosen all straps, pull the harness over the head, and place the chin in the chin cup.
  - Pull the head harness well down on the back of the head.
  - Tighten the harness gently, starting with the eye straps, and then the bottom and middle straps.
  - Check the fit by closing off the air hose or canister opening with the palm of the hand and inhaling gently. The user should then hold his/her breath for a few seconds. A good fit is indicated if the mask remains collapsed toward the face during this time.

- Powered air-purifying respirator (PAPR):

- Powered Air-Purifying Respirators look like Full-Face Respirators, except that they have an air pump attached. It has HEPA filters or cartridges. The air pump and the filters are usually on a belt or in the face piece. The pump pulls the air through the filters. It blows the air through a hose into the mask.
- This respirator only filters the dirty air that's already in the room. It is an air-purifying respirator. The air coming through the hose pushes air away from the sides of the mask. This is a positive pressure respirator. The air pump makes a positive pressure inside the mask. One good thing about a positive-pressure respirator is that if it leaks, it leaks out.
- With a powered air-purifying respirator, the lungs do not have to work so hard to pull the air through the filters. The air pump does some of the work.
- If the batteries are low, this PAPR is not better than a full-face respirator without an air pump.

## **8. Respirator Maintenance:**

- Respirators will be regularly cleaned and disinfected. Those issued for the exclusive use of one worker will be cleaned after each day's use, or more often, if necessary. Those used by more than one worker will be thoroughly cleaned and disinfected after each use. Respirators used in fit testing will be cleaned and disinfected in between use. EHS will establish respirator cleaning and maintenance instructions (See Appendix D).
- Respirator Storage: Each department will store respirators properly in a clean and sanitary location. UNE employees who have been assigned a respirator for their exclusive use will be responsible for storing their own respirator in a clean and sanitary location. This location must protect the respirator from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. They should be packed and stored in a manner that prevents deformation of the face-piece and exhalation valve.
- Respirator Inspection: Respirators used routinely will be inspected before use and during cleaning. Worn or deteriorated parts will be replaced. Any respirator that fails inspection will be removed from service and discarded immediately and the EHS will provide new equipment. The following items will be part of the inspection:
  - Respirator function
  - Tightness of connections



- Condition of various parts including but not limited to: face piece, head straps, valves, connecting tubes, cartridges, canisters or filters.
- Check elastomeric parts for pliability and deterioration.
- Make sure cartridges are not clogged, if they are, seek replacement cartridges.

NOTE: For SCBA's, monthly inspections should take place and all air and oxygen cylinders should be maintained in a fully charged state and be recharged when pressure falls to 90% of manufacturer's recommended pressure level. Also, ensure regulator and warning devices function properly.

- Cartridges and filters shall be changed based on the most limiting factor below:
  - Prior to expiration date;
  - Manufacturers recommendations for the specific use and environment;
  - After each use;
  - When requested by employee;
  - When contaminant odor is detected; and
  - When restriction to air flow has occurred as evidenced by increase effort by user to breathe normally.
- \*\*Cartridges shall remain in their original sealed packages until needed for immediate use\*\*
- Surveillance of Work Site: Many variables may affect the need for respiratory protection. Upgrading of required respiratory protection will be based on appropriate surveillance of the work area conditions, degree of employee exposure, heat or cold stress and physical exertion.

**9. Evaluation:**

- Regular inspection and evaluation will be carried out to determine the continued effectiveness of the program. EHS will make frequent inspections of all areas where respirators are used to ensure compliance with the UNE Respiratory Protection Program.

**10. Emergency Response Respirators**

- All respiratory protection used in emergency situations will be rated for IDLH situations since the nature of the emergency may not be known.
- All emergency respiratory protection will follow the standards set forth in the UNE Respiratory Protection Program.
- Emergency respiratory protection will be clearly marked as such and put in the appropriate locations.
- ONLY employees that have been approved and trained for respirator use should be using the emergency response respiratory protection.
- Respirators used for emergency response may not be used on a regular basis, so they are to be inspected after use and monthly. Monthly inspections should be documented, signed, and dated by the employee.

**SECTION 7.3**

**TRAINING AND RECORDKEEPING**

**1. Training:**

- All personnel will be instructed and trained in the proper use of respirators and their limitations. The training will include all elements of the Respiratory Protection Program and will be designed by the program administrator.
- Training will occur in the following cases:
  - When beginning to wear respiratory protection, after medical monitoring clearance, but before the employee uses respiratory protection.
  - Training will be repeated annually, within 12 months of previous training session.
  - If there are changes in the workplace that dictate re-training.
  - If there are changes in the Respiratory Protection Program that would require re-training of employees.
  - If the employee shows inadequacies in the knowledge of the program or has had trouble

understanding the training.

- Training will provide the employee:
  - An opportunity to handle the respirator,
  - Have it fitted properly,
  - Test its face piece-to-face seal,
  - Wear it in normal air for a long familiarity period,
  - To wear it in a test atmosphere

**2. Record Keeping:**

- All fit testing forms will be maintained in EHS for minimum of three years.
- Medical surveillance records will be maintained the Human Resources Department due to confidentiality regulations.
- Training records of topics covered by this section will be maintained by the EHS Department for a minimum of three years, unless otherwise specified.
- A copy of the Respiratory Protection program is contained within the UNE Safety Manual and may be requested from EHS at any time.

**UNE AREAS THAT REQUIRE RESPIRATORY PROTECTION**

<b>WORK AREA</b>	<b>EXPOSURE HAZARD</b>	<b>DEPT/ MANAGER</b>	<b>TYPE OF RESPIRATORY PROTECTION REQD</b>
<b>SELECT RESEARCH LABS</b>	ANIMAL DANDER	VARIOUS	N95 MASK
<b>SELECT LABS</b>	CHEMICAL/BIOLOGICAL EXPOSURE	VARIOUS	N95 MASK
<b>COLLEGE OF MEDICINE ROTATIONS</b>	BODILY FLUID/GERM EXPOSURE	COLLEGE OF MEDICINE	N95 MASK
<b>FACILITIES SHOP</b>	SAW DUST, FUMES, VEHICLE REPAIR	FACILITIES	N95 MASK
<b>POOL MAITENANCE</b>	POOL CHEMICALS	FACILITIES	HALF FACE CARTRIDGE MASK
<b>SELECT PAINTING OPERATIONS</b>	VAPORS FROM PAINTS, STAINS, VARNISHES	FACILITES	HALF FACE CARTRIDGE MASK

<b>SECTION 8.0</b>	<b>HAZARD COMMUNICATION</b>
<p><b>1. Introduction:</b></p> <ul style="list-style-type: none"> <li>University of New England's management is committed to the prevention of incidence or happenings that result in injury and/or illnesses, and to comply with all applicable federal and state health and safety rules. Therefore, we require that managers and employees use their best efforts in providing a safe and healthy work environment for all employees; that all levels of supervisors are accountable for the health and safety of those employees under their direction; and through this written hazard communication program share assigned responsibility to ensure performance under that responsibility.</li> <li>All University of New England Colleges are included in this program. This written program will be available to all employees through the UNE shared files.</li> </ul>	
<b>SECTION 8.1</b>	<b>RESPONSIBILITIES</b>
<p><b>1. Environmental Health and Safety Department:</b></p> <ul style="list-style-type: none"> <li>Develop and implement policies and procedures on hazard communication derived from Federal OSHA HazCom/Right to Know Standard.</li> <li>Provide appropriate materials such as labels, containers, cabinets, and SDS's to comply with the HazCom program.</li> <li>Ensure that staff and students are receiving adequate Hazard Communication training.</li> <li>Review and update the Hazard Communication program annually and as needed.</li> </ul> <p><b>2. Lab Personnel/Staff/Supervisors:</b></p> <ul style="list-style-type: none"> <li>Familiarize themselves with all Hazard Communication policies and procedures.</li> <li>Follow all guidelines set forth in the HazCom program.</li> <li>Report an issues or problems with the HazCom program.</li> <li>Ensure proper training has been given to all employee's and students.</li> </ul> <p><b>3. Employees/Students/Laboratory workers:</b></p> <ul style="list-style-type: none"> <li>Familiarize themselves with all Hazard Communication policies and procedures.</li> <li>Familiarize themselves with all chemicals and hazardous substances in their work area by reviewing SDSs and labels and take the proper precautions accordingly.</li> <li>Follow all guidelines set forth in the HazCom program including labeling, donning proper PPE, and other precautions.</li> <li>Report an issues or problems with the HazCom program.</li> <li>Attend all required training sessions or online training presentations as needed.</li> </ul>	
<b>SECTION 8.2</b>	<b>HAZARD COMMUNICATION PROGRAM</b>
<p><b>1. Policies, Practices, and Procedures and the Globally Harmonized System:</b></p> <ul style="list-style-type: none"> <li>As of March 2012, OSHA has adopted the Globally Harmonized System (GHS). It is an international approach to hazard communication, "providing agreed criteria for classification of chemical hazards, and a standardized approach to label elements and safety data sheets." It is based on major existing systems around the world and will be a universal system being used globally. All programs and labeling were required to be updated by June 1, 2016.</li> <li><u>The three major changes with the GHS are:</u> <ul style="list-style-type: none"> <li><b>Hazard classification:</b> The definitions of hazard have been changed to provide specific criteria for classification of health and physical hazards, as well as classification of mixtures. These specific criteria</li> </ul> </li> </ul>	










will help to ensure that evaluations of hazardous effects are consistent across manufacturers, and that labels and safety data sheets are more accurate as a result.

- **Labels:** Chemical manufacturers and importers will be required to provide a label that includes a harmonized signal word, pictogram, and hazard statement for each hazard class and category. Precautionary statements must also be provided.
- **Safety Data Sheets:** Will now have a specified 16-section format.
- **Hazard Classification:** The revised Hazard Communication Standard (HCS) has specific criteria for each health and physical hazard, along with detailed instructions for hazard evaluation and determinations as to whether mixtures or substances are covered. It also establishes both hazard classes and hazard categories—for most of the effects; the classes are divided into categories that reflect the relative severity of the effect. The current HCS does not include categories for most of the health hazards covered, so this new approach provides additional information that can be related to the appropriate response to address the hazard.
- **Labels:** It is the policy of the University of New England that all chemicals used by University of New England personnel must be labeled.
  - All chemicals used by UNE personnel will be labeled. The 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.
  - As of June 2016, all chemicals must be labeled with GHS compliant labels that include pictograms, signal words, a hazard statement and a precautionary statement (see table below). Alternative labeling systems such as the National Fire Protection Association (NFPA) 704 Hazard Rating and the Hazardous Material Information System (HMIS) are permitted for workplace containers. However, the information supplied on these labels must be consistent with the revised HCS, e.g., no conflicting hazard warnings or pictograms.
  - All hazardous materials and chemicals contained in secondary containers shall be stored and labeled appropriately with either an extra copy of the original manufacturer's label or with a University of New England label that identifies the chemical, and lists the appropriate hazard warning. Questions about proper labeling requirements should be addressed to your supervisor or the Environmental Health & Safety Department.
  - Labels put on the container by the manufacturer, importer, or other responsible party will not be removed. If the manufacturer's label does not contain the required information, additional information will be supplemented on a UNE label. The manufacturer labels must comply with the new GHS guidelines by December 1, 2015 so they will have the updated pictogram system described below that all employees should be familiar with.
  - The NFPA label system will be used for all transfer containers and those not labeled properly by the manufacturer. All added labels will include the following information:
    - Identity of the chemical, trade name and composition
    - Health, flammability, reactivity, and other codes
  - When changes occur on the SDS, the label will be updated immediately.
  - Labeling is not required for portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the individual who performs the transfer.
  - Where hazardous materials are transported by piping systems, above ground pipes will be labeled with the name or abbreviation of the chemical and an arrow indicating direction of the flow of the material

by stenciling or attaching tags of metal or other such suitable material naming the material transported on or near valves.

- GHS Labeling requirements as of June 2016: Under the revised HCS, once the hazard classification is completed, the standard specifies what information is to be provided for each hazard class and category. Labels will require the following elements:
  - **Pictogram:** a symbol plus other graphic elements, such as a border, background pattern, or color that is intended to convey specific information about the hazards of a chemical. Each pictogram consists of a different symbol on a white background within a red square frame set on a point (i.e. a red diamond). There are nine pictograms under the GHS.
  - **Signal words:** a single word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. The signal words used are "danger" and "warning." "Danger" is used for the more severe hazards, while "warning" is used for less severe hazards.
  - **Hazard Statement:** a statement assigned to a hazard class and category that describes the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard.
  - **Precautionary Statement:** a phrase that describes recommended measures to be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical or improper storage or handling of a hazardous chemical.

### HCS Pictograms and Hazards

<b>Health Hazard</b> 	<b>Flame</b> 	<b>Exclamation Mark</b> 
<ul style="list-style-type: none"> <li>• Carcinogen</li> <li>• Mutagenicity</li> <li>• Reproductive Toxicity</li> <li>• Respiratory Sensitizer</li> <li>• Target Organ Toxicity</li> <li>• Aspiration Toxicity</li> </ul>	<ul style="list-style-type: none"> <li>• Flammables</li> <li>• Pyrophorics</li> <li>• Self-Heating</li> <li>• Emits Flammable Gas</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>	<ul style="list-style-type: none"> <li>• Irritant (skin and eye)</li> <li>• Skin Sensitizer</li> <li>• Acute Toxicity (harmful)</li> <li>• Narcotic Effects</li> <li>• Respiratory Tract Irritant</li> <li>• Hazardous to Ozone Layer (Non Mandatory)</li> </ul>
<b>Gas Cylinder</b> 	<b>Corrosion</b> 	<b>Exploding Bomb</b> 
<ul style="list-style-type: none"> <li>• Gases under Pressure</li> </ul>	<ul style="list-style-type: none"> <li>• Skin Corrosion/ burns</li> <li>• Eye Damage</li> <li>• Corrosive to Metals</li> </ul>	<ul style="list-style-type: none"> <li>• Explosives</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>
<b>Flame over Circle</b> 	<b>Environment (Non Mandatory)</b> 	<b>Skull and Crossbones</b> 
<ul style="list-style-type: none"> <li>• Oxidizers</li> </ul>	<ul style="list-style-type: none"> <li>• Aquatic Toxicity</li> </ul>	<ul style="list-style-type: none"> <li>• Acute Toxicity (fatal or toxic)</li> </ul>

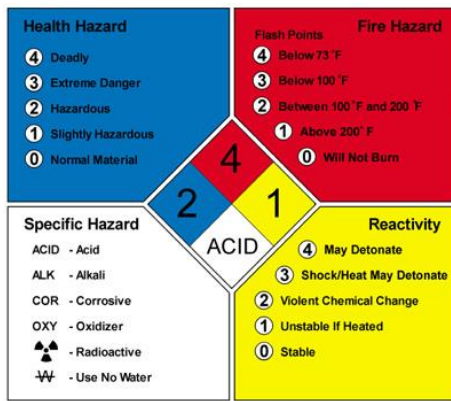
- Safety Data Sheets (SDS):

- An SDS will be maintained for every hazardous substance used on campus. Under the new GHS, MSDS will now be called the SDS (Safety Data Sheet) and all new SDS's will have the same format including the following 16 sections:
  - Section 1. Identification
  - Section 2. Hazard(s) identification
  - Section 3. Composition/information on ingredients
  - Section 4. First-Aid measures
  - Section 5. Fire-fighting measures
  - Section 6. Accidental release measures
  - Section 7. Handling and storage
  - Section 8. Exposure controls/personal protection
  - Section 9. Physical and chemical properties
  - Section 10. Stability and reactivity
  - Section 11. Toxicological information
  - Section 12. Ecological information
  - Section 13. Disposal considerations
  - Section 14. Transport information
  - Section 15. Regulatory information
  - Section 16. Other information, including date of preparation or last revision

Sections 12-15 may be included in the SDS, but are not required by OSHA.

- An SDS for any new substance must be obtained by the department and shared with the Environmental Health and Safety Office prior to use of that substance and will be readily available to all employees in their work area for review during each work shift.
- Each department will be responsible for reviewing, updating, and maintaining an SDS notebook for the substances in that department. The notebook will include:
  - SDS for all hazardous substances used or stored.
  - The UNE Hazard Communication Program Plan
- A master file of SDS is kept and maintained by EHS. Anyone who wishes to review an SDS, or the Hazard Communication Plan may do so at any time by contacting their supervisor or EHS.
- Additional questions from employees, employee representatives, or medical providers are to be directed to EHS.
- If an employee is transported to a medical facility with a chemical exposure, the appropriate SDS will be sent or made available.
- Contact EHS if an SDS for an existing material cannot be found, or replaced.
- Any person buying a hazardous material or chemical from a retail vendor (hardware store) will request an SDS at time of purchase.
- If an SDS is missing for a hazardous chemical in use, anyone using that chemical should immediately contact their supervisor or EHS and not use that hazardous chemical until an SDS (or appropriate SDS information) is available and the required training provided.

## NFPA label key



- Hazardous Material/Chemical Inventory and Control:
  - See Section 18 of the manual.
- Each laboratory, art studio or health center or department which uses hazardous chemicals is required to add that inventory of hazardous chemicals to this section and have it available for review and/or inspection at all times.
- The following materials are not covered by the Hazard Communication Standard:
  - Any hazardous waste as defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 USC 6901 et seq.) when subject to regulations issued under that act by the Environmental Protection Agency.
  - Tobacco or tobacco products.
  - Wood or wood products. **NOTE:** Wood dust is not exempt since the hazards of wood dust are not "self-evident" as are the hazards of wood or wood products.
  - Consumer products (including pens, pencils, adhesive tape) used in the work place under typical consumer usage.
  - Articles (i.e. plastic chairs).
  - Foods, drugs, or cosmetics intended for personal consumption by employees while in the work place.
  - Foods, drugs, cosmetics, or alcoholic beverages in retail stores packaged for retail sale.
  - Any drug in solid form used for direct administration to the patient (i.e. tablets or pills).
- Contractors / Sub-Contractors:
  - It is the responsibility of supervisor or the EHS to provide contractors (with employees) the following information:
    - Hazardous chemicals to which they may be exposed while on the job site, and the procedure for obtaining SDS's;
    - Precautions that employees may take to lessen the possibility of exposure, by using appropriate protective measures, and an explanation of the labeling system used.
    - It is the responsibility of contractors to identify and obtain SDS's for the chemicals the contractor is bringing into the workplace.
- Posting:
  - The University of New England has posted information about this Hazard Communication Plan for all employees at locations where any chemicals covered by this Plan are stored.
- Hazardous, Non-Routine Tasks - Periodically, employees may perform hazardous non-routine tasks. Before starting work on such projects, each affected employee will be given information by their supervisor about the hazardous chemicals to which they may be exposed during this activity. This information will include:
  - Specific chemical hazards
  - Protective/safety measures the employee must take.

- Measures that University of New England has taken to reduce the hazards, including ventilation, respirators, presence of co-workers, and emergency procedures.

## SECTION 8.3

## TRAINING AND RECORDKEEPING

### 1. Training:

- The Environmental Health & Safety Director will be responsible for maintaining and annually reviewing and updating the UNE WebCT Hazard Communication training course. EHS is also responsible for assigning training requirements to each UNE job description and annually alerting UNE employees as to their training. Failing to take this mandated training would make one ineligible for future salary increases and could be grounds for disciplinary action. These warnings are to emphasize the absolute necessity of successfully completing this required training.
- The training module will include the following:
  - Overview of Hazard Communication Plan requirements.
  - Hazard chemicals present in the workplace.
  - Location and availability of the written Hazard Communication Plan.
  - Physical and health effects of hazardous chemicals.
  - Methods and observation techniques used to determine the presence or release of hazardous chemicals in the work area.
  - How to reduce or prevent exposure to these hazardous chemicals through use of control/work practices and personal protective equipment.
  - Steps that University of New England has taken to reduce or prevent exposure to these chemicals.
  - Safety emergency procedures to follow if the employee is exposed to those chemicals.
  - How to read labels and review SDSs to obtain appropriate hazard information.
- After completing the training module, each employee will take an exam which will certify that they have completed the training.
- Re-Training:
  - It is necessary for work area supervision to provide additional employee training concerning workplace hazards when:
    - New materials or processes are introduced into the workplace.
    - Process or equipment changes are made that could cause new or increased employee exposure.
    - Procedures or work practices are introduced, or changed, which could cause changes in the employees' exposure.
    - Employees are transferred from one work area to another where different hazards are present.
  - All employees have been trained on the new SDS (Safety Data Sheet) format enacted by the new Globally Harmonized System as of April 2014.
- Record Keeping:
  - Chemical Inventory List: The master list of chemicals will be updated annually and will be maintained by the Environmental Health and Safety Specialist along with a list of materials (chemicals) no longer in use.
  - Air Monitoring Results: The results of facility air monitoring will be maintained by EHS and will be available to employees upon request.
  - Medical Surveillance Results: Records and results will be maintained by the Human Resources Department and may be accessed only with the expressed written consent of the employee due to HIPAA regulations.
  - Training records of topics covered by this section will be maintained by the Department of Human Resources for a minimum of three years, unless otherwise specified.



<b>SECTION 9.0</b>	<b>LOCKOUT/TAGOUT</b>
<p><b>1. Introduction:</b></p> <ul style="list-style-type: none"> <li>This procedure establishes the minimum requirements for the lockout of energy isolation devices whenever maintenance or servicing is done on machines or equipment. It will be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance where the unexpected energization or start-up of the machine or equipment or release of stored energy could cause injury. Only authorized users, identified by Facilities Management may conduct lockout/tagout (LOTO) operations. This program adheres to OSHA regulations contained in 29CFR1910.147.</li> </ul>	
<b>SECTION 9.1</b>	<b>RESPONSIBILITIES</b>
<p><b>1. Environmental Health and Safety:</b></p> <ul style="list-style-type: none"> <li>Assist supervisors in the identification of those employees who will be designated "Authorized Users".</li> <li>Assist supervisors/department heads, in the development of operation specific LOTO procedures.</li> </ul> <p><b>2. Department Heads/ Supervisors:</b></p> <ul style="list-style-type: none"> <li>Identify, with the assistance of EHS, those employees who will be designated "Authorized Users".</li> <li>Develop, with the assistance of EHS, operation specific LOTO procedures.</li> <li>Provide LOTO equipment.</li> <li>Assist authorized users in the identification of affected personnel.</li> </ul> <p><b>3. Authorized Users:</b></p> <ul style="list-style-type: none"> <li>Follow the requirements set forth by this policy.</li> <li>Identify and notify affected employees prior to any LOTO operation.</li> </ul>	
<b>SECTION 9.2</b>	<b>LOCKOUT TAGOUT POLICIES AND PROCEDURES</b>
<ul style="list-style-type: none"> <li>All equipment will be locked out or tagged out to protect against accidental or inadvertent operation to avoid injury to personnel.</li> <li>Do not attempt to operate any switch, valve or other energy isolating device where it is locked or tagged out.</li> </ul> <p><b>1. Lockout/Tagout Device Selection:</b></p> <ul style="list-style-type: none"> <li>Prior to the selecting a lockout/tagout device a job site evaluation must be conducted. Lockout/tagout operations will only proceed after evaluation of management. Tagout devices will only be used when a lockout device cannot be used or available and then only if complete employee protection can be ensured. Any time that the tagout method is used, a post-job investigation will be conducted to identify required equipment for future applications. <ul style="list-style-type: none"> <li><u>The pre-job evaluation must include:</u> <ul style="list-style-type: none"> <li>Identification of the machinery/equipment to be worked on</li> <li>Identification of the energy type and source</li> <li>Verification that machinery or equipment may be locked or tagged out</li> <li>Identification of affected personnel</li> </ul> </li> </ul> </li> <li><u>Durability:</u> <ul style="list-style-type: none"> <li>Lockout and tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.</li> <li>Tagout devices shall be constructed and printed so that exposure to weather conditions or wet and</li> </ul> </li> </ul>	

damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.

- Tags shall not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.
- **Standardization:** Lockout and tagout devices shall be standardized within the facility in at least one of the following criteria: Color; shape; or size; and additionally, in the case of tagout devices, print and format shall be standardized.
- **Lockout devices** shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.
- **Tagout devices**, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie.
- **Identifiable:** Lockout devices and tagout devices shall indicate the identity of the employee applying the device(s).
- **Tagout devices** shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as the following: *Do Not Start. Do Not Open. Do Not Close. Do Not Energize. Do Not Operate.*

## **2. Lockout/Tagout Sequence:**

- **Preparation for shutdown:** Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.
- **Notify supervisor of lockout/tagout operations.**
- **Notify all affected employees** that a lockout/tagout system is going to be utilized on equipment in their work area, as well as the type of device being used and the reason for lockout/tagout. If the equipment is operating, shut it down.
- **Machine or Equipment Shutdown:** The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown must be utilized to avoid any additional or increased hazards to employees as a result of equipment stoppage. Operate the appropriate switches, valves or other energy isolating devices so that the equipment is isolated from its energy sources. Stored energy (such as that in springs, parts of equipment that are elevated and could drop, rotating fly-wheels, capacitors, hydraulic systems, and air, gas, or steam or water pressure, etc.) must be dissipated or restrained.
- **Machine or equipment isolation:** All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).
  - Lockout or tagout devices shall be affixed to each energy isolating device by authorized employees.
  - Lockout devices, where used, shall be affixed in a manner to that will hold the energy isolating devices in a "safe" or "off" position.
- Tagout devices, where used, shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited. (Where tagout devices are used with energy isolating devices designed with the capability of being locked, the tag attachment shall be fastened at the same point at which the lock would have been attached.)
- Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

- **Stored Energy:** Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe. If there is a possibility of re-accumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists.
- **Verification of isolation:** Prior to starting work on machines or equipment that have been locked out or tagged out, the authorized employee shall verify that isolation and de-energization of the machine or equipment have been accomplished. After making sure that no personnel are exposed, verify power to equipment is off to assure the effectiveness of the lockout/tagout device. Return operating controls to neutral or off after performing verification.
- Perform work or maintenance on locked out/tagged out device.
- **Release from lockout or tagout:**
  - Before lockout or tagout devices are removed and energy is restored to the machine or equipment, procedures shall be followed and actions taken by authorized employees to ensure the following:
    - The work area shall be inspected to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.
    - The work area shall be inspected to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.
  - **Lockout or tagout devices removal:** Each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device unless the authorized employee who applied the lockout or tagout device is not available to remove it, that device may be removed under the direction of the employer, provided that:
    - Specific procedures and training for such removal have been developed, documented.
    - The specific procedure provides equivalent safety to the removal of the device by the authorized employee who applied it. The specific procedure shall include at least the following elements:
      - Verification by the employer that the authorized employee who applied the device is not at the facility.
      - Making all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout or tagout device has been removed and ensuring that the authorized employee has this knowledge before he/she resumes work at that facility.

### **3. Temporary Device Removal:**

- In situations in which lockout or tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component thereof, the following sequence of actions shall be followed:
  - Clear the machine or equipment of tools and materials in accordance.
  - Remove employees from the machine or equipment area
  - Remove the lockout or tagout devices
  - Energize and proceed with testing or positioning
  - De-energize all systems and reapply energy control measures and continue the servicing and/or maintenance.

### **4. Procedure Involving More Than One Person:**

- If more than one person is required to lock out or tag out equipment, each person will place their own personal lockout/tagout device on the energy isolating devices. Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout or tagout device (such as an operations lock).
  - When an energy isolating device cannot accept multiple locks or tags, a multiple lockout/tagout device

(such as multiple hole hasp) may be used.

- As each person no longer needs to maintain their lock out protection, that person will remove their lock from the multiple lockout/tagout device.

**5. Exceptions:**

- When work is being done on electrically powered equipment of the ordinary "cord and plug" type where power can be turned off by unplugging the equipment and the plug is under the exclusive control of the employee servicing the equipment.

**6. Lockout/Tagout Device Storage Location:**

- Lockout/tagout devices maintained by Facilities management will only be used by "Authorized Personnel" that are part of the Lockout/Tagout Program.

**7. Lockout/Tagout Device Use:** Lockout/Tagout devices and keys will only be used by the personnel who have been assigned those devices. A master list of assigned devices will be maintained in the Facilities Management Office.

**8. Contractors:** In the event outside contractors perform work requiring lockout/tagout procedures, they are required to notify Facilities Management of their procedures. All affected personnel must be notified of the procedure and must comply when working with or around contractor personnel.

**9. Operation Specific Lockout/Tagout Procedures:**

- Each department will develop specific LOTO procedures for each type of equipment that requires LOTO, utilizing the requirements of this section.

**SECTION 9.3**

**TRAINING AND RECORDKEEPING**

**1. Training:**

- All employees involved in lockout/tagout procedures will attend training annually.

**2. Annual Training** will include (at a minimum):

- The recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.
- The purpose and use of the energy control procedure.
- Other employees whose work operations are or may be in an area where energy control procedures may be utilized, shall be instructed about the procedure, and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.
- The limitations of tags as opposed to locks such as:
  - Tags are warning devices affixed to energy isolating devices and do not provide the physical restraint on those devices that is provided by a lock.
  - When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it and it is never to be bypassed, ignored, or otherwise defeated.
  - Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.
  - Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.
  - Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.
  - Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

**3. Retraining:**

- Retraining shall be provided for all authorized and affected employees whenever:
  - There is a change in their job assignments,

- A change in machines, equipment or processes that present a new hazard,
  - When there is a change in the energy control procedures.
  - The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.
- 4. Record Keeping:**
- Training records will be maintained by Human Resources and/or EHS.

**SECTION 10.0**

**BLOOD BORNE PATHOGENS EXPOSURE CONTROL PLAN**

**1. Introduction:**

- It is the goal of the University of New England to provide a safe and healthful environment for all faculty, staff, students, and visitors, by eliminating and/ or minimizing occupational exposure to blood-borne pathogens (BBP).
- The guidelines set forth in this section serve as a basis for preventing the exposure to infectious materials. Adherence to these guidelines, common sense and the use of universal precautions will greatly reduce the potential for exposure and assure the safest environment possible.
- All departments are encouraged to develop and utilize specific exposure control plans as long as the requirements of this section are met. The UNE Exposure Control Plan will be available to all employees via the UNE Shared Drive on the network.

**SECTION 10.1**

**RESPONSIBILITIES**

**1. Environmental Health and Safety:**

- Ensure all employees are properly trained on the Blood Borne Pathogens program.
- Conduct inspections to guarantee compliance with the BBP Program.
- Revise the program annually or as needed.

**2. Management/Department Heads/Lab Supervisors**

- Make certain all employees have been trained on the BBP Program.
- Ensure all lab workers/medical staff/researchers adhere to the policies and procedures in the BBP program.
- Suggest improvements and changes to the BBP Program to EHS as issues arise.
- Report any BBP exposure incidents to EHS and Human Resources as soon as they occur so follow up can take place and proper reporting can be filed.
- Ensure all reporting is filled out in the event of an exposure incident in a timely fashion.

**3. Lab Workers/Medical Staff/Researchers/UNE Employees**

- Attend all training sessions for the BBP Program as required.
- Report all exposure incidents as soon as they occur and file all necessary reports.
- Suggest improvements to the BBP Program to your Department Head/Supervisor.
- Follow all policies, practices and procedures set forth in the BBP Program.

**SECTION 10.2**

**BLOOD BORNE PATHOGENS POLICIES AND PROCEDURES**

**1. Universal Precautions:**

- Universal precautions are prudent practices that apply to the prevention of infectious disease transmission. These precautions, based on the recommendations from the Centers of Disease Control and Prevention, must be used routinely on all persons and contaminated items. Under normal circumstances, however, contact with sweat and tears does not require gloves or other personal protective equipment.

These precautions must be used whenever differentiation of body fluids is difficult. At a minimum, the following universal precautions will be taken when dealing with blood and Other Potentially Infectious Materials (OPIM). Each department is encouraged to develop their own specific universal precautions to address departmental needs.

- Assume that all blood and bodily fluids are infectious for HBV, HIV, and other blood-borne pathogens.
- Wear appropriate PPE when handling potentially infectious waste (i.e. gloves, aprons, eye wear etc.) based upon the task being performed.

- **Hand washing:**

- Hand washing is the single *most important* means of preventing the spread of infection. It is also an important measure to decrease occupational exposure to blood-borne pathogens.
- Use warm running water.
- Use mild liquid soap.
- Friction is the most important part of the hand washing procedure.
- Careful washing between fingers is essential.
- Hands are thoroughly rinsed while they are held downward.
- Dry thoroughly with a single use towel or hot air drying machines.
- Turn water faucet off with paper towel. (This prevents re-contamination of the hands.)
- Hands should be washed:
  - After touching any patient secretions, or any potentially infectious material.
  - Before leaving any isolation room.
  - Before performing invasive procedures.
  - Before touching any immune-suppressed patient.
  - After performing personal bodily functions.
- When provision of hand washing facilities is not feasible, UNE shall provide either an appropriate antiseptic hand cleanser in conjunction with clean cloth/paper towels or antiseptic towelettes.
  - When antiseptic hand cleansers or towelettes are used, hands shall be washed with soap and running water as soon as feasible.

- **Sharps disposal:**

- Used sharp items (needles, scalpel blades, glass pipettes, and other sharp instruments) should be considered as potentially infectious and be handled with extraordinary care to prevent accidental injuries.
  - Disposable syringes and needles, scalpel blades, glass pipettes, and other sharp items will be placed in puncture-resistant containers designated specifically for this purpose.
  - These containers must be located as close as practical to the area where the sharps are used. Under normal circumstances, needles will not be recapped, purposefully bent, or removed from disposable syringes, or otherwise manipulated by hand.
  - Shearing or breaking of contaminated needles is prohibited. If recapping or removal of used needles must be done and no alternative is feasible or such action is required by specific medical procedure, a single-handed method must be used.

## **2. Engineering and Work Practice Controls:**

- Work Practice Controls are procedures that change the way tasks are performed in the work-place to reduce the chance of exposure to blood or other potentially contaminated materials. These include procedures for processing and handling blood and blood products, waste disposal, and personal hygiene.

- **Labeling/Container Handling:**

- Materials which contain blood or other potentially infectious materials (OPIM) will be placed in a container that conforms to and is handled in accordance with the following requirements:
  - Prevents leakage during the collection, handling, processing, storage, and transport of the

specimens.

- Red in color and labeled with the international biohazard symbol.
- Any specimens which could puncture a primary container will be placed within a secondary container which is puncture resistant.
- If outside contamination of the primary container occurs, the primary container will be placed within a secondary container which prevents leakage during the handling, processing, storage, transport, or shipping of the specimen.
- Any refrigerator or freezer used to store blood or OPIM will be affixed with appropriate label and marked "No Food or Drink".
- Empty food containers will not be used to store blood or OPIM.
- Individual containers of blood or OPIM that are placed in a labeled container during transport, storage, shipment, or disposal are exempt from the above labeling requirements.
- Contaminated needles and other contaminated sharps will not be bent, recapped, removed, sheared, or purposely broken. UNE considers all needles, scalpels, and other medical utensils to be biohazards, regardless of use, and will be disposed of as regulated waste.
  - Disposable syringes and needles, scalpel blades, glass pipettes, and other sharp items will be placed in puncture-resistant containers designated specifically for this purpose.
  - These containers must be located as close as practical to the area where the sharps are used. Under normal circumstances, needles will not be recapped, purposefully bent, or removed from disposable syringes, or otherwise manipulated by hand.
  - Shearing or breaking of contaminated needles is prohibited. If recapping or removal of used needles must be done and no alternative is feasible or such action is required by specific medical procedure, a single-handed method must be used.
- Eating, drinking, smoking, applying cosmetics, lip balm and handling contact lenses are prohibited in work areas where there is a likelihood of occupational exposure.
- Food and drink shall not be kept in refrigerators, freezers, shelves, and cabinets or on counter tops or bench tops where patient care items<sup>1</sup>, blood-borne or other potentially infectious materials are present.
- All procedures involving blood or other potential infectious materials shall be performed in such a manner as to minimize splashing. Employees shall be trained in these techniques during the on-the-job orientation period.
  - To minimize aerosols produced by removing the stoppers from a tube of blood, cover the stopper first with gauze or tissue to minimize the risk.
- If a requisition form becomes contaminated with blood, serum, urine or other secretions, this can serve as a source of infection. If a form is grossly contaminated, another shall be prepared and the soiled paper discarded appropriately.
- Many commercial control sera may contain hepatitis antigen. These sera should be considered a source of possible hepatitis and treated with the same degree of caution as a patient's specimen.
- All specimens shall be covered, capped, corked or plugged, except while being collected or are in the process of separation, pouring or analysis.
- Pipetting of specimens and control sera shall be done using a rubber bulb or other safety device (not a mouth piece).
- Tubes to be centrifuged should be covered. Centrifuges shall be decontaminated as needed; bench tops (countertops) are decontaminated daily or as needed.
- Specimens sent to an outside laboratory shall be sealed and bagged for transportation and labeled as per instructions given by the laboratory.

<sup>11</sup> Patient care items include medications, stethoscopes and lab specimens.

- Sharps must be maintained upright throughout use.
- The use of Safer Medical Devices, which provide protection from needle stick injuries shall be evaluated and utilized according to the following protocol:
  - The staff who use medical devices (syringes) shall make the final selection from among the various devices on the market,
  - The Sharps-Safety and Needle stick-Prevention Device (NPD) Evaluation Forms will be used to document the decision making process,
  - The NPD evaluation forms will be submitted to the Environmental Health and Safety Coordinator on an annual basis.
- Lab Specimens:
  - All lab specimens must be contained in leak proof containers. The outside of the primary container will be clean and dry.
  - Individual / single specimens will be placed in a secondary container or leak proof bag for transport.
  - All specimens must be clearly labeled with the appropriate patient information.
  - All specimens will be handled as if potentially infectious therefore special labeling of known high risk specimens is not necessary.

### **3. Exposure Determination:**

- UNE has performed an exposure determination for employees (including work study students) who may incur occupational exposure to BBP or other potentially infectious materials. The tasks performed by persons employed in these positions which potentially expose them to blood or other potentially infectious material (OPIM) are listed after each job. These determinations were made without regard to the use of personal protective equipment (PPE):
  - Health Center Physicians, Physicians Assistants, Nurses, Registered Nurse Practitioners, and Medical Assistants:
    - Giving injections
    - Blood drawing
    - Genealogical exams
    - Treating cuts and abrasions
    - Throat cultures
    - Urinalysis
    - Ear and eye examinations
  - Nursing Faculty:
    - Giving and supervising/instructing the giving of injections
    - Handling of blood specimens or other potentially infectious material
    - Handling contaminated laundry
  - Dental Hygiene Clinical Faculty:
    - Teaching and demonstrating dental hygiene techniques
    - Assessing student performance in a clinical environment
  - Dental Hygiene Staff Working in Clinic:
    - Handling of waste material in a clinical environment
    - Handling of documents used in a clinical environment
  - Medical School, Science, Medical Technology Faculty as Applicable:
    - Blood sampling
    - Handling of blood, serum, and OPIM
    - Working with cadavers in the Anatomy Lab.
  - Athletic Trainers:
    - Injury care and first aid



- Treating cuts and abrasions.
  - Sore drainage
  - Removal of stitches
- Diabetic testing (blood glucose)
- Handling contaminated material
  - Removal of blood on indoor courts
  - Handling vomit on athletic indoor courts
- Housekeepers/Custodians:
  - Handling biomedical waste.
  - Clean up spills of potentially infectious material
- Plumbers:
  - Work on the systems (sewer lines) that contain potentially infectious material.
- Campus Center Managers, Life Guards, Resident Life Staff, Safety Personnel, Fitness Center Staff, Security Personnel, UNE EMS:
  - First responder in emergency situations.
    - First Aid
    - CPR
  - Vomit, blood, urine clean-up and/or cordoning off of contaminated areas.

**4. Personal Protective Equipment (PPE):** The use of PPE may decrease occupational risk to blood-borne pathogens. PPE is provided to employees at no cost and must be accessible in all areas where occupational exposure is possible. All employees shall be trained in the use of PPE at the time of employment.

- PPE will be provided to employees by individual departments.
- Repairs and replacements will be made by the department at no cost to employees.
- PPE or garments will be cleaned, laundered, and disposed of through procedures established by this section at no cost to employees.
- PPE or garments which are contaminated by blood will be removed immediately or as soon as feasible.
- PPE will be removed prior to leaving the work area.
- Gloves will be worn where it is reasonably anticipated that employees could have had contact with blood, other potentially infectious materials, non-intact skin, and mucous membranes, and will be available where thought appropriate by the supervisor or EHS.
- Disposable gloves are not to be washed or decontaminated for re-use and are to be replaced as soon as practical when they become contaminated or as soon as feasible if they are torn, punctured, or when their ability to function as a barrier is compromised.
- Masks in combination with eye protection devices, such as goggles or glasses with solid side shield, or chin length face shields, are required to be worn whenever splashes, spray, splatter, or droplets of blood or other potentially infectious materials may be generated and eye, nose, or mouth contamination can reasonably be anticipated.
- Some rare and extraordinary situations may warrant personnel briefly declining the use of PPE, when in their judgment the use of PPE would prevent the delivery of health care or pose a threat to themselves. These circumstances would be expected to be life threatening. In general, appropriate personal protective equipment is expected to be used whenever occupational exposure is expected.
- Listed below are the minimum requirements recommended during controlled situations to protect the health care worker from potentially infectious agents. This list is not all-inclusive. Judgment is required on the part of the health care worker to assess the need for additional barrier protection in less-controlled situations.
  - Other barriers may be required to protect the patient/employee during certain procedures. If an

employee has an open cut or abrasion on their hands, the employee is responsible for protecting it by covering it with a bandage as well as the use of gloves.

- Sterile technique is to be used during sterile procedures.
- Precautions with broken glass should be taken.
- Gloves, dustpan and broom, tongs or forceps should be used to isolate or reduce the hazard to exposure to OPIM or the creation of a situation where the employee injures themselves.

The following chart represents situations by body system and barrier and containment techniques designed to reduce exposure. These examples are not inclusive of all possible exposures.

**Legend:**

X = Routinely

\* = If Splattering is Likely

S = If Soiling is Likely

Liquid proof gown should be worn instead of lab coat if ++

PROCEDURE	HAND WASHING	GLOVES	GOWN	MASK	EYE PROTECTION
<b>Housekeeping/kitchen</b>					
Changing visibly soiled beds	X	X	S		
Clean-up of:					
Chemical spills	X	X	S or ++	*	*
Spills of blood/body substances	X	X	S or ++		*
Surfaces contaminated by blood/body substances	X	X	S		*
Dishwashing/tray service	X				
Emptying wastebaskets	X	X			
Food preparation	X				
Laundry and bed stripping	X	X	X		
<b>Laboratory</b>					
Hemocult	X	X	X		
Lab send-out prep (bagging, etc)	X	X			
Reprocessing contaminated devices/sterilizations	X	X	X		*
Specimen separation, O & P fixation	X	X	X		X
Strep A, HCG test, Chlamydia test, Mono test, Hct, ESR, KOA/Wet Mono test, Hct, ESR, KOA/Wet prep, Nickerson Biggy culture	X	X	X		*
UA, UA-mico, UA-culture	X	X	X		
Venous or capillary punctures	X	X	X		
<b>Medical/Nursing Procedures</b>					
Bathing/helping with shower	X		*		
Bleeding, pressure application to control	X	X	S	*	*
Breathing treatment	X	S			
Combing/inspecting hair for nits or lice	X	X	X		
CPR		X	X		
Dressing change for wounds with little or no drainage	X	S			

Emptying drainage receptacles, including urine receptacles					
Bed pans, emesis basins	X	X	S	*	*
Enema	X	X	S		
Fecal impaction, removal of	X	X			
Intravenous termination	X	X	*		*
Irrigation – wound	X	X	S	*	*
Medication administration:					
Eye, ear and nose drops	X				
IM/SC/ID	X	S			
Oral, nurse administered:					
Handed to patient	X				
Placed in patient's mouth by nurse	X	X			
Rectal/suppository	X	X			
Topical medication to intact skin	X				
Topical medication to lesion	X	X			
Pap		X	X		
Sutures					
Placing sutures	X	X	X	*	*
Removing sutures	X	X	X		
Surgical procedures, minor					
Toe nail removal	X	X	X		
Mole excision	X	X	X		
I & D	X	X	X		*
Skin scrapings	X	X	X		
Vital signs	X				
Wart removal					
Liquid Nitrogen	X	X	X		*
TriChloroAcetic Acid	X	X	X		*
Wound packing	X	X	X		

### 5. Communication of Hazards to Employees:

- Biohazard labels and signs are used by the University of New England to communicate hazards to employees.
  - The biohazard label or sign includes the universal biohazard symbol and the word "BIOHAZARD" clearly marked. They are either an integral part of the container or located as close to the hazard as possible.
  - LABELS shall be affixed to:
    - Containers of regulated waste.
    - Refrigerators and freezers containing blood or other potentially infectious material; and other containers used to store, transport or ship blood or other potentially infectious material except for:
      - Red/orange bags or red containers.
      - Containers of blood, blood components, or blood products that are labeled as to their contents and have been released for transfusion.
      - Individual containers of blood or other potentially infectious materials that are placed in a labeled container during storage, transport, shipment or disposal.
      - Regulated waste that has been decontaminated.

- Laundry bags
- Labels required for contaminated equipment shall state which portions of the equipment remain contaminated.
- Signs shall be posted at the entrance of work areas where the potential exists for biohazard exposure.
- Signs shall be official biohazard signs with letters and symbols clearly marked.

## **6. Sterilization, Disinfection, and Waste Disposal:**

- Sterilization and Disinfection:
  - Instruments, equipment, and supplies used in any procedure or process involving potentially infectious materials should be sterilized in an autoclave as much as possible.
  - Wherever possible, disposable items should be used so as to avoid the use of chemical sterilization.
  - Surfaces subject to contamination will be wrapped where practical and disinfected before and after each procedure using hospital or industrial strength germicide.
- Waste Handling:
  - Regulated waste is defined as any waste capable of transmitting blood-borne pathogens. The following wastes are determined to be regulated wastes:
    - Liquid or semi-liquid blood or other potentially infectious material (OPIM):
    - Semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any bodily fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids;
    - Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and
    - HIV-Containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs or other tissues from experimental animals infected with HIV or HBV.
    - Items contaminated with blood or other potentially infectious materials and which would release these substances in a liquid or semi-liquid state if compressed.
    - Items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling.
    - Contaminated sharps.
    - Pathological and microbiological wastes containing blood or other infectious material.
    - All regulated waste shall be bagged, by the generator, in sealed red bags.
    - Vomit, urine, and nasal secretions are not considered Bio-Hazardous Waste unless visibly contaminated with blood.
    - Regulated waste shall be handled using protective equipment.
    - All regulated waste must be segregated from regular trash and deposited into a designated container labeled "regulated waste" and affixed with the international biohazard symbol.
    - Regulated waste containers must be lined with a polyethylene bag at least of 3ml thickness.
    - Regulated waste containers will be closed when not in use.
    - Sharps must be segregated from other wastes and disposed of in leak-proof, rigid, puncture-resistant, shatterproof containers and then disposed of in a designated regulated waste container.
    - Any container used to transport this waste shall be marked with the biohazard symbol. These containers shall be closable and leak proof on the sides and bottom as well as puncture resistant.
    - A secondary container must be used in situations where the outside of the first container becomes contaminated.

- Transportation:
  - Prior to transport of regulated waste to a storage area, the following steps must be taken:
    - Double bag all wastes.
    - Verify that warning labels are visible.
    - Inspect bags for leakage (re-bag if needed).
    - Place all waste into a "Regulated Waste" box.
    - Tape the box closed securely.
    - Call Facilities Management or place a Facilities work order to arrange for transportation to the storage area. Provide the following information:
      - Your name and extension.
      - Location of the waste.
      - Amount of waste.
    - Any waste packaged or labeled as a regulated waste must be disposed of by EHS at a licensed disposal facility.
    - Employees are not permitted to take their protective equipment home and launder it. It is the responsibility of UNE to provide, repair, replace and dispose of personal protective equipment.
    - Any faculty or staff personal clothing which has been contaminated by potentially infectious material must be removed immediately and controlled as a biohazard

## **7. Blood Spills:**

- Blood spills are of extreme concern for transmission of blood-borne pathogens. The following procedure must be followed by all employees who remove or disinfect a blood or bodily fluid spill:
  - Gloves must be worn for the cleaning of any body fluid spills. Vinyl aprons must be worn for a large spill.
  - For small body fluid spills in rooms, corridors, etc., visible material should be removed and the area disinfected with a university approved disinfectant.
- For large body fluid spills in non-patient care areas, the contaminated area should be completely covered with paper towels and flooded with a university approved disinfectant.
  - Allow contact time (minimum of ten minutes).
  - Remove soiled paper towels and dispose of in a red bag.
  - Wet mop area with a clean solution.
  - Large body fluid spills in patient care areas:
    - Spills should be wiped up as soon as possible with paper towels, and the towels discarded in a red bag.
    - Final clean-up of the area should include disinfections of the contaminated surfaces using a university approved disinfectant providing for a contact time of at least 10 minutes to complete the disinfections process.
- For body fluids containing glass:
  - Glass is removed by sweeping with a brush and dust pan, tongs or forceps.
  - Body fluid is then removed following proper procedure as stated in the policy above.
  - Equipment used to clean a body fluid is then disinfected using a university approved disinfectant.
  - All glass needs to be disposed of in a sharps container or broken glass disposal box in a manner to prevent exposure to another employee.
  - Dispose of protective equipment. Wash hands.
- Decontamination of Work Surfaces:
  - To prevent exposure of the employee to blood or other potentially infectious material remaining on a work surface from a previous procedure, all potentially contaminated work surfaces must be

decontaminated (disinfected with a university approved disinfectant) after completion of each procedure, when they are overly contaminated during a procedure, and at the end of the work shift.

- When procedures are performed continually throughout a shift, the work area should be decontaminated after each set of tasks is completed.
- The work area should be decontaminated if an employee leaves the area so that it does not present a source of contamination to other workers.
- Work surfaces in patient care areas do not need to be cleaned after each procedure unless that procedure results in contamination of the area.

- **Equipment:**

- All equipment shall be decontaminated immediately if contamination has occurred and before being sent for repairs or service.
- Employees who perform this function shall be trained in the methods appropriate to the procedure.

- **Trash receptacles:**

- All reusable receptacles used for regulated waste shall be decontaminated weekly and immediately following any gross contamination.
- The containers shall be visibly inspected at the time of emptying and decontaminated if soiled. A university-approved germicide shall be used for this procedure.
- Any employee who performs this function shall use protective equipment designed to prevent exposure.
- This procedure includes all receptacles used to hold contaminated items even when a plastic liner is used.

### **8. Hepatitis B Vaccination:**

- All faculty and staff who have been identified as having potential occupational exposure to blood or other potentially infectious materials will be offered the Hepatitis B vaccination, at no cost to the employee.
- All those effected must fill out an HBV vaccination consent/declination form provided by Human Resources.
- UNE does not offer the vaccine to new employees who have previously received the vaccine series.
- Those employees who decline the HBV (by signing the declination section of the vaccination consent/declination form) vaccine but wish to receive the vaccination at a later date will be allowed to at no cost.
- Any recommended boosters by the US Department of Health and Human Services will also be available.
- The vaccination will be offered during work hours and administered by, or under the supervision of a licensed physician at an offsite healthcare facility designated by Human Resources.
- All employees who are eligible for the vaccine are trained on the provisions of this standard and are offered the vaccine within ten (10) days of employment.
- Occupational exposure is defined as reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

### **9. Exposure Incidents:**

- An exposure incident is defined as "specific eye, mouth, other mucus membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that result from the performance of an employee's duties."
- In the event that an exposure incident occurs, the employee is to immediately wash the affected area thoroughly with soap and water or saline.
- The employee should get immediate medical attention, if necessary, and will report the incident to their program director, supervisor, or department head. If after reviewing the circumstances surrounding the

potential exposure, this person determines that an exposure to blood or OPIM has occurred then they will:

- Notify EHS and Human Resources
- Conduct a post exposure investigation and document the results on an Accident Incident Investigation Report (See Appendix G).
  - Once completed, send this form to EHS.
  - If the exposure pertains to a student, then a copy will also be sent to the Dean of Students.
- Approach the source individual in a confidential manner and begin pretest counseling procedures in order to attempt to get consent to test the source individual's blood for HIV and HBV antibody/antigen.
  - Consent to test form must be signed by the source individual indicating whether or not consent is granted to test their blood for HIV/HBV antibody/antigens.
- In the event of an occupational exposure, a confidential medical exam will be made available to the employee.
  - The medical evaluation will consist of HIV/HBV testing in the manner recommended by the Center of Disease Control (CDC) as soon as possible after the incident and the opportunity for retesting as recommended by the CDC.
  - If the employee initially declines testing they may elect to have a baseline studies drawn and saved for up to 90 days. At any point during this time period, they may elect to have the tests performed on the saved blood.
  - All exposed persons and source individuals are to be directed to an offsite occupational health facility designated by the Human Resources department for laboratory testing.
  - A copy of the OSHA Blood-borne Pathogens Standard and a completed Accident Investigation Report form will be sent to the appropriate facility.
  - Within 15 days from the date of examination the attending physician will submit their written opinion of the examination. The post-exposure evaluation and follow up will include at a minimum, the following information:
    - The results of the examination, in regard to the exposure incident only.
    - Any medical conditions resulting from the exposure incident which requires further evaluation or treatment.
    - Explanation of treatment or evaluations recommended.
- Follow up of the exposed worker will include counseling, medical evaluation of febrile illness that occurs up to 12 weeks post exposure, and the use of safe and effective post exposure measures according to standard medical practice.
  - Post exposure counseling will be performed by the same person who performed the pre-test counseling.
  - The post exposure counseling will be documented and filled with other information relevant to the incident (contact the Assistant Director of HR).
  - In order to perform appropriate follow up, the health care professional responsible for the follow up shall be provided with the following information:
    - A copy of the standard.
    - A description of the employee's duties as they relate to the incident.
    - Documentation of the route of exposure and circumstance under which the exposure occurred.
    - Results of source individuals blood testing, if available.
    - Medical records relevant to the treatment of the employee, including vaccination status.
  - A professional medical opinion will be provided to the employee within 15 days of the follow-up evaluation.
  - Educational or equipment changes are in order to further safeguard all employees from the future

incidents of exposure.

**SECTION 10.3**

**TRAINING, RECORDKEEPING, AND REVIEW**

**1. Training:**

- Specific information and training about occupational hazards and required protective measures will be provided to all employees with occupational exposure.
- All current employees with occupational exposure have been provided with this training.
- New employees with potential occupational exposure will receive training at the time of initial employment. These employees shall be trained prior to being placed in positions where occupational exposure may occur.
- Training is required on an annual basis.
- Provision will be made to provide training by a qualified trainer whenever a change in an employee's responsibilities, procedures, or work situation is such that an occupational exposure risk is affected.
- Training will be provided by an individual(s) who is knowledgeable in the subject matter, at no cost to the employee, during work hours, and at a location reasonably accessible to the employee.
- The training will be appropriate in content, language, and vocabulary to the educational, literacy, and language background of the employee.
- The training will include:
  - An accessible copy of the regulatory text of the standard.
  - A general explanation of the epidemiology and symptoms of the blood-borne pathogens.
  - An explanation of the modes of transmission of blood-borne pathogens.
  - An explanation of the exposure control plan and the means by which the employee can obtain a copy of the written plan.
  - An explanation of the appropriate methods of recognizing risks and other activities that may involve exposure to blood and other potentially infectious materials.
  - An explanation of the use and limitation of methods that will prevent or reduce exposure including appropriate engineering control, work practices, and personal protective equipment.
  - Information of the types, proper use, location, removal, handling, decontamination and disposal of personal protective equipment.
  - An explanation of the basis for selection of personal protective equipment
  - Information on the Hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine and vaccination will be offered free of charge
  - Information on the appropriate action to take and the person to contact in an emergency involving blood or other potentially infectious materials
  - An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow up that will be made available.
  - Information on the post exposure evaluation and follow up that the employer is required to provide for the employee following an exposure incident.
  - An explanation of the signs and labels and/or color-coding used to identify hazards.
  - An opportunity for interactive questions and answers with the person conducting the training
  - Information regarding the Sharps Injury Log

**2. Record Keeping:**

- Medical records of employees covered under this section are confidential and will be maintained at the designated occupational health facility in collaboration with the Human Resources Department for at least the duration of the employment plus thirty years.
- These records will not be disclosed to anyone without the employee's written consent, unless required by



OSHA regulations or state law.

- Training records will be kept in the Department of Human Resources for a minimum of three years from the date on which the training occurred. Training records shall include the following information;
  - The dates of the training sessions;
  - The contents and the summary of the training sessions;
  - The names and qualifications of persons conducting the training; and
  - The names and job titles of all persons attending the training sessions.

### 3. Exposure Incident Investigation Reports

- These reports will be kept in the Environmental Health and Safety Office for a minimum of three years.

### 4. Sharps Injury Log:

- UNE requires that the OSHA 300 Log be maintained for the record keeping of percutaneous injuries from contaminated sharps. The information in the sharps injury log shall be recorded and maintained in such manner as to protect the confidentiality of the injured employee. The sharps injury log shall maintain at a minimum:
  - The type and brand of the device involved in the incident,
  - The department or work area where the exposure incident occurred, and
  - An explanation of how the incident occurred.
  - The Sharps Injury Log shall be forwarded to the Department of Human Resources on an annual basis and when requested.
  - Annual documentation must be maintained regarding the consideration and implementation of appropriate commercially available and effective safer medical devices designed to eliminate or minimize occupational exposure. This documentation will be forwarded to the Environmental Health and Safety Department annually and upon request.

### 5. Review:

- This section will be reviewed for accuracy at least annually.
- Input is solicited for the annual review from employees responsible for patient care through representatives on the University Wide Safety Committee or by notifying the Human Resources Department or EHS.

## SECTION 11.0

## COMPRESSED GAS CYLINDER SAFETY

### 1. Introduction:

- The use of compressed gas cylinders is a frequent adjunct to Laboratory and Facilities Management daily operation. These cylinders can contain gases that vary in chemical properties from inert and harmless to toxic and explosive. In addition, the high pressures of these gases constitute a serious hazard in the event that the cylinders are exposed to physical damage and/or high temperatures.

## SECTION 11.1

## RESPONSIBILITIES

### 1. Environmental, Health, and Safety Department:

- Be aware of what types of gases are being stored in compressed cylinders and where.
- Ensure all parties handling compressed gas cylinders have been properly trained in their dangers and handling practices.

### 2. Employees/Lab Workers/Researchers

- Attend any required training on compressed gas cylinder safety
- Store and handle compressed gas cylinders properly according to the UNE rules/regulations.
- Report any problems/concerns regarding gas cylinder safety to EHS.

**1. Identification:**

- Compressed gas cylinders will be legibly marked, with either the chemical or trade name of the gas, for the purpose of identifying gas content.
- Cylinders will be marked by the distributor with stencil, stamp, or securely attached label. Whenever practical, the marking will be on the shoulder of the cylinder.
- Markings, labels, decals, tags, or stencil marks used for the identification of contents will not be defaced.
- No marks or numbers stamped into a cylinder will be changed or obliterated.
- Painting of cylinders is prohibited as most are color coded for the type of gas that is inside the cylinder.

**2. Repairs and Alterations:**

- Cylinders, valves, or safety-relief devices will not be repaired or altered except by the vendor.

**3. Inspections:**

- Compressed gas cylinders will be inspected by the user prior to and during use to determine that cylinders are in safe condition for use. Inspect for corrosion, valve damage or leaks, evidence of tampering, etc. Never use a flame to detect flammable gas leaks.

**4. Moving and Handling:**

- Caps will be kept on at all times except when cylinders are physically connected to a regulator, manifold, or distribution apparatus.
- Cylinders will not be lifted by the cap.
- Cylinders will not be dropped or permitted to strike against each other or other surfaces violently.
- Cylinders will be transported by suitable hand trucks, or rolled on the bottom edge.
- Before returning cylinders to the supplier, the valve will be closed and the protective cap reattached.

**5. Storing Cylinders:**

- Compressed and liquefied gases in portable cylinders will be stored in accordance with National Fire Protection Association (NFPA) standard number 55 and will be chained to a stand or the wall at all times when not in use to prevent them from being knocked over. Cylinders should be chained/strapped individually and nesting of cylinders should be avoided. If it is unavoidable due to spatial constraints to chain the cylinder individually, please contact EHS to evaluate the individual situation and make a recommendation.
- Cylinder storage areas will be posted prominently with the types of gases to be stored.
- Where gases of different types are stored at the same location, cylinders should be grouped by types of gas, and the groups arranged to take into account the types of gas contained, e. g., flammable gases will not be stored next to oxidizing gases.
- When oxygen and a fuel gas such as acetylene are to be stored, they will be separated by a distance of twenty feet or by a non-combustible barrier at least five-feet high having a fire resistance rating of one-half hour. (The one exception is in the Facilities Mechanics Bay, Oxygen and Acetylene are always together on a cart and OSHA considers this "in use" or "ready to use" and has a letter of interpretation that allows for this as long as certain requirements are met.)
- Cylinders will not be stored near highly flammable or combustible substances.
- Charged and empty cylinders will be stored separately. Old stock should be stored in an accessible area so as to be removed first.
- The gas cylinder storage area will be dry, cool, well ventilated, and fire resistant, where practical.
- Heated storage areas will be arranged so that stored cylinders cannot be spot-heated or heated above 125 degrees F (51. 7C).

- Cylinders should not be stored in the open; but in such cases where required, they will be protected against extremes of weather.
- In summer certain gases when stored in the open should be protected from the continuous rays of the sun (refer to the supplier for specific recommendations).
  - If ice or snow accumulates on a cylinder, it should be thawed at room temperature or with water at a temperature not exceeding 125 degrees F (51.7C).
- Cylinders will be protected from any object that will produce a cut or other abrasion in the surface of the metal. Do not store near the elevators or gangways, or in locations where heavy moving objects may strike or fall on them.
- Cylinders will not be exposed to continuous dampness and will not be stored near salt or other corrosive chemicals or gases. Corrosion may damage the cylinders and may cause the valve-protective caps to stick. The bottoms of the cylinders should not be stored anywhere wet or damp that may cause rust.

#### **6. Withdrawing Cylinder Content:**

- Cylinder valves should be opened slowly. Never direct high-pressure gas streams toward the body as embolisms can result from gas forced under the skin or entering a wounded area.
- Only tools provided or approved by the gas manufacturer will be used to open cylinder valves. Never hammer the valve wheel in attempting to close the valve.
- Do not attempt to open valves or caps that are hard to open or frozen because of corrosion. These cylinders must be returned to vendor.
- Never use compressed gas, unless protected by suitable traps or check valves, where the cylinder or its contents is apt to be contaminated by the feedback of process material.
- Before a cylinder is removed from service, determine that the cylinder valve is closed securely and all pressure is released from connected systems.

#### **7. Securing Cylinders:**

- Cylinders will be secured to fixed structures or to movable carts in the case of gas, welding, or cutting apparatus. Cylinders should be chained/strapped individually and nesting of cylinders should be avoided. If it is unavoidable due to spatial constraints to chain the cylinder individually, please contact EHS to evaluate the individual situation and make a recommendation.
- Cylinders will be secured by the body, at two-thirds the height of the cylinder, and not by the valve.
  - Cylinders will be secured by one of the following methods:
    - Safety chain provided with a positive locking device such as a nylon strap with locking buckle or self-locking hook to prevent accidental release of cylinder.
    - Nylon strap and buckle assembly with attachment fixture. This item is specially designed to restrain portable gas cylinders.

#### **8. Tagging Procedure:**

- At the time of delivery a Standard Cylinder Status Tag will be placed on all cylinders by the purchasing department.
- When the cylinder is placed in use, the bottom of the tag with the word "Full" will be removed.
- When the cylinder is no longer required, the "In Use" section of the tag will be removed and the vendor will be called for pick-up. All cylinders will be treated as though residual gas remains.

#### **9. Cylinder Defects and Disposal:**

- If a cylinder leak cannot be stopped by tightening a valve gland or packing nut, close the valve; and if possible, detach the cylinder from the installation. Contact the vendor for removal from the building.
- When cylinders, valves, contents, etc., are in such a condition that the only safe or practical solution is disposal, request removal through the vendor.
- If an unsafe condition exists, the pick-up request will be expedited by EHS.

<b>SECTION 12.0</b>	<b>HAZARDOUS WASTE MANAGEMENT</b>
<p><b>1. Introduction:</b></p> <ul style="list-style-type: none"> <li>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."</li> </ul>	
<b>SECTION 12.1</b>	<b>RESPONSIBILITIES</b>
<p><b>1. Environmental, Health and Safety Department</b></p> <ul style="list-style-type: none"> <li>Pick up hazardous waste from satellite accumulation areas when containers are full.</li> <li>Inspect satellite accumulation area logs that are filled out by faculty and staff periodically to make sure they are complete, accurate, and up-to-date.</li> <li>Conduct weekly inspections of mass accumulation areas in Alford and Pickus Halls.</li> <li>Contact the hazardous waste vendor on a quarterly basis for hazardous waste pick-ups.</li> <li>Classify all hazardous waste properly and maintain hazardous waste manifests from each pick up and keep them on file in the EHS office.</li> <li>Educate faculty, staff, and students on hazardous waste policies and procedures.</li> <li>Evaluate the Hazardous Waste Management program on an annual basis and make necessary changes as needed.</li> <li>Respond to Hazardous Waste releases and spills as needed.</li> </ul> <p><b>2. Laboratory Faculty, Staff and Students and Facilities Department:</b></p> <ul style="list-style-type: none"> <li>Complete hazardous waste training as required.</li> <li>Follow all rules and regulations regarding the Hazardous Waste Management program set forth by UNE and the Maine DEP.</li> <li>Ensure all inspection logs for satellite accumulation areas are filled out completely, accurately, and that they are up-to-date.</li> <li>Contact EHS for any hazardous waste pickups from satellite accumulation areas once containers are full (See Appendix I).</li> <li>Wear proper PPE when handling hazardous waste.</li> <li>Report to any hazardous waste releases or spills to EHS or Security (weekends or off hours) as soon as they occur.</li> </ul>	
<b>SECTION 12.2</b>	<b>HAZARDOUS WASTE MANAGEMENT POLICIES AND PROCEDURES</b>
<p><b>1. Hazardous Waste Determination:</b></p> <ul style="list-style-type: none"> <li>With the assistance of EHS, each department will determine if a known waste is hazardous. A waste is a hazardous waste if: <ul style="list-style-type: none"> <li>It is a listed hazardous waste by the EPA.</li> <li>It is a mixture of a non-hazardous waste and a listed hazardous waste.</li> <li>It exhibits any of the following characteristics of hazardous waste, as defined by the State of Maine Hazardous Waste Management Rules: <ul style="list-style-type: none"> <li>Ignitable</li> <li>Corrosive</li> </ul> </li> </ul> </li> </ul>	

- Reactive
- Toxic

## **2. 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.

## **3. Hazardous Waste Generation:**

- The Biddeford campus is a Large Quantity Generator of Hazardous Waste (LQG), meaning that it must ship its waste within 90 days of first adding waste to a container. 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).
- The Portland campus is a Small Quantity Generator (SQG), meaning 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.

## **4. Satellite Accumulation Areas (SAA) (Biddeford only) Requirements:**

- Each laboratory/studio/work area that generates hazardous waste will designate a location 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.

## **5. 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.
- Accumulated for less than 90 days, unless designated a Satellite hazardous waste.
- 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.

## **6. Management of Satellite Accumulation Areas (SAA) (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 can 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.
- 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\*

**7. Management of the Main Accumulation Area (MAA):**

- The Environmental Health and Safety Specialist is responsible for weekly inspections of the MAA. The completed inspections will be kept on file for a minimum of one year. (See Appendix K)
  - 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.

**8. Off-Campus Hazardous Waste Disposal:**

- The Environmental Health and Safety Specialist will contact the transportation/disposal contractor to arrange pick-up and disposal of wastes.
- The Environmental Health and Safety 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 Environmental Health and Safety Specialist will inspect all manifests for accuracy and ensure that the transportation vehicle is properly placarded before leaving the premises.
- 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.

**8. 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.

- For acute hazardous wastes 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.

### 9. Spills:

In the event of hazardous waste spill, the following steps will be taken.

- Warn others in the area.
- Isolate the area.
- If fumes are present, evacuate the area.
- 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).
- Notify EHS (ext. 2488) or Security (ext. 366) if off hour or weekend.

## SECTION 12.3

### TRAINING AND RECORDKEEPING

#### 1. Training:

- All personnel associated with the control of hazardous waste will be trained, annually, on the contents of this section.

#### 2. Record Keeping:

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

## SECTION 13.0

### GENERAL SAFETY TRAINING

#### 1. Introduction:

- Accidents and unhealthy conditions are caused by unsafe acts and unsafe conditions. The purpose of training faculty, staff, and work study students in the different aspects of Environmental Health and Safety is to eliminate unsafe acts and increase the faculty, staff, and work study students awareness to the hazards associated with their work.

## SECTION 13.1

### RESPONSIBILITIES

#### 1. Environmental, Safety and Health Department:

- Ensure training presentations and materials are available for all safety related training sessions.
- Provide training for departments and individuals as needed or annually depending on the topic.
- Work with supervisors, managers, department heads, and Human Resources to make sure all training records are up-to-date and completed accurately.
- Update training requirements and presentations as needed as regulations change.

#### 2. Supervisors/Managers/Department Heads

- Make employees available for all required training sessions.
- Ensure employees attend the required safety training sessions.
- Maintain disciplinary action for those who do not complete training sessions when necessary.

### 3. Staff/Students/Researchers/Staff/Faculty

- Attend all required safety training sessions that are relevant to your position.
- If unable to attend group safety sessions that are scheduled, re-schedule a make-up session with the instructor at a time that is convenient for both parties.

## SECTION 13.2

## TRAINING POLICIES AND PROCEDURES

### 1. Training Courses:

- The following are areas of training that are required for certain faculty, staff, and work-study students. Required training will be based upon the hazards identified by hazard assessments conducted for all positions and compared to the requirements below. This following list is a list of general topics available to all faculty, staff and students, more topics are available for specialized areas upon request.
  - General Safety: Required for all new UNE faculty and staff. This information is distributed by the Human Resources Office during employee orientation and consists of an overview of UNE health and safety policies and practices, as well as employee health and safety rights and responsibilities. (Section 2)
  - Ladder Safety Training: Required for all staff, and work study students who regularly work on or climb portable extension, straight, or step ladders in the course of their work. (Section 3)
  - Confined Space Entry: Required for all staff who work or have the potential to work in confined and/or hazardous atmosphere spaces. The training emphasizes the hazards associated with confined and/or hazardous atmosphere spaces. Procedures are explained for preparation of, entry into, and occupancy of these spaces. (Section 5)
  - Electrical Safety: Required for all faculty and staff students working on or around live electrical equipment, such as in mechanical or electrical equipment rooms. Training is primarily oriented toward identifying potential risks and protective measures. (Section 6)
  - Respiratory Protection: Required for all faculty, staff, and work students who use, or may need to use, respirators on a sporadic or routine basis. This course includes training in the proper usage, care, and maintenance, and limitations of respirators. Hands-on training, medical evaluation, and fit testing are provided. No employee may wear a respirator without the required training, fit testing, and pulmonary exam. (Section 7)
  - Hazard Communication: Required for all faculty, staff, and work study students who handle chemicals and or hazardous materials in any form. This program instructs attendees in the hazard recognition of, storage of, handling of, use of personal protective equipment, emergency procedures, and equipment associated with the use and storage of chemicals and hazardous materials. (Section 8)
  - Lockout/Tagout: Required for all staff who may be working on or doing maintenance on energized equipment, whether electrical, mechanical, hydraulic, or pressurized. Training covers hazard recognition, and University lockout/tagout requirements. (Section 9)
  - Blood borne Pathogens: Required for faculty, staff, and work study students who may incur occupational exposure to Blood-borne Pathogens or other potentially infectious materials as part of their position requirements. This course includes training in the Hepatitis B Vaccination Program. (Section 10)
  - Hazardous Waste: Required for all faculty, staff, and work study students who work with or have been designated as responsible for the management of hazardous waste. (Section 12)
  - Radiation Safety: Required for all faculty, staff, and work-study students who work with or around radioactive material. (Section 15)
  - Hearing Conservation: Required for all employees who are a part of the hearing conservation program and are exposed to excessive noise as part of their routine job activities. (Section 16)
  - Laboratory Safety Training: Required for all faculty, staff, and work study students performing



laboratory operations. Training includes hazard recognition, protective measures and emergency procedures. (Section 17)

- Hazardous Materials Awareness Training: Required for the first responders to accidents or spills, such as University Security Officers. (Section 18)
- Personal Protective Equipment (PPE): Required for all faculty, staff, and work study students who have been determined to need PPE. Training covers the basics of selection, use, cleaning and wearing of PPE. (Section 19)
- Formaldehyde: Required for all faculty, staff and work study students who are exposed to formaldehyde atmospheres containing 1ppm or greater concentration. Identification of these areas can be provided by EHS.
- Fire Extinguisher Training: required for those faculty, staff, and work study students expected to use portable extinguishers in the workplace, such as Fire Watch monitoring during welding, cutting, or brazing operations. (Provided by Safety and Security Department as requested)
- Manual Lifting and Material Handling Training: Required for all faculty, staff, and work study students who lift, carry, or handle heavy or bulky materials. Training includes ergonomic hazard recognition, proper lifting, techniques, protective measures and personal protective equipment.
- Ergonomics: Required for any faculty or staff whose primary task is to occupy an office work station for more than 4 consecutive hours, exclusive of breaks, on a daily basis. Ergonomic evaluations are available by request through the EHS department. Please refer to Personnel Handbook for Ergonomics training requirements. (Section 20)
- Fire Safety: Required for all faculty, staff, and work study students and will be conducted at the person's primary work area. Designed to inform faculty, staff, and work study students of potential fire hazards in their work space and to review University evacuation plans and routes. (Provided by Safety and Security)
- Safety Manual: Safety Manual policies and procedures not covered by specific training seminars will be reviewed by faculty, staff, and work study students who are affected under that specific policy or procedure.

**2. Mastery Exams:**

- In some courses a mastery exam has been developed and covers the required elements of training in specific course.
- A grade of 80 will be allowed in lieu of the training seminars described above.

**SECTION 13.3**

**TRAINING AND RECORDKEEPING**

**1. Training Frequency:**

- Unless otherwise specified, all training will be conducted as soon as practicable and then annually.

**2. Record Keeping:**

- Training records of topics covered by this section will be maintained by the Department of Human Resources for a minimum of three years, unless otherwise specified.

**SECTION 14.0**

**UNIVERSITY WIDE SAFETY COMMITTEE**

**1. Introduction:**

- 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.

## **2. Mission:**

- 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.

## **3. Functions:**

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

## **SECTION 14.1**

## **UNIVERSITY WIDE SAFETY COMMITTEE MEMBERSHIP**

### **1. Membership:**

- The Director of the Environmental, Health and Safety Department 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:
  - College of Arts and Sciences- represented by the Chemical Hygiene Officer (CHO)
  - College of Medicine - represented by the Chemical Hygiene Officer (CHO)
  - College of Health Professions – represented by the Chemical Hygiene Officer (CHO)
  - Marine Science Center—represented by the Chemical Hygiene Officer (CHO)
  - Research Integrity
  - Environmental Health and Safety Specialists and Sustainability Coordinator
  - Director of the Environmental, Health and Safety Department (Chair)
  - Radiation Safety Officer
  - Facilities Management
  - Student Affairs
  - Campus Center
  - Safety and Security
  - Housing
  - Department of Human Resources
  - Risk Manager
  - Portland Campus:
    - Facilities Management
    - College of Pharmacy—represented by Chemical Hygiene Officer
    - College of Dental Medicine—represented by Chemical Hygiene Officer
    - College of Dental Hygiene—represented by Chemical Hygiene Officer
  - UNE Compliance Officer

### **2. Alternates:**

- Each member of the committee will select an alternate to serve in their place should they be unable to attend committee meetings. At the first meeting of the academic year, each member will give the chairman the name of an individual who has agreed to serve as their alternate.

### **3. Meetings:**

- Meetings will be conducted monthly and will be at a time and location designated by the committee chair. Special meetings may be called by the chair at any time.
- Notification of regular and special meetings will be made by the chair as far in advance of the meeting date as possible and will, where possible, include an agenda. Such notification will be given to all members and alternates.
- Recommendations will be made by the membership by a show-of-hands, or by a voice vote. It will be the duty of the chair to present all such recommendations to the appropriate Vice President or member of management in written form for approval.

**SECTION 14.2**

**RECORDKEEPING**

**1. Record Keeping:**

- Meeting minutes are compiled by input from all members of the committee and then prepared by the Environmental, Health and Safety Department.
- The minutes will be prepared as soon as possible after each meeting, approved by the chair and copies sent to the following: each member and alternate of the UWSC, Safety Committee File, VP of Operations.

**SECTION 15.0**

**RADIATION SAFETY**

**1. Introduction:**

- This section describes the University of New England's management of ionizing radiation and establishes procedures related to control and safe use of radioactive materials. The program and procedures described in this section are also intended to facilitate compliance with the University's radioactive material license and applicable state and federal regulations. A copy of the radioactive material license and relevant regulations are available for review in the Environmental Health and Safety Office. The program and procedures contained herein apply to all users of ionizing radiation. The provisions and requirements outlined in this section are an integral condition of the radioactive material license.

**SECTION 15.1**

**RESPONSIBILITIES**

**1. Environmental Health & Safety Department (EHS):**

- Manage the radiation safety program with the assistance of the Radiation Safety Officer.
- Refer matters to the University Wide Safety Committee (UWSC) for review and approval, and advise on the overall status of the radiation safety program.
- Ensure that annual radiation safety training is conducted with assistance of Radiation Safety Officer, department heads, supervisors, and faculty.
- Act as liaison with Federal and State regulatory agencies.
- Approve proposals for procurement, use, transfer, and disposal of radioactive materials.
- Maintain permanent records of receipt, use, transfer, and disposal of radioactive materials.
- Maintain files of Federal, State, and local licenses and registrations concerned with radiation sources.
- Assist the RSO in the supervision of cleanup and decontamination of spills or other emergencies.

**2. Radiation Safety Officer (RSO):**

- Ensure that the terms and conditions of the Radioactive Material License are met, and that all required records are maintained.
- Interact with and ensure timely reporting to State Radiation Control Program Staff, Nuclear Regulatory Commission and other authorities as required.
- Initiate applications for renewals and/or amendments of Radioactive Material License.

- Act as a technical advisor to the UWSC and principal investigators. Assess radiological hazards and ensure the implementation of appropriate radiation safety precautions.
- Work closely with faculty and staff to coordinate all applicable activities related to the management of the radiation safety program.
- Conduct or oversee radiation safety training and documentation thereof.
- Receive and monitor shipments of radioactive materials, delivering acceptable incoming shipments to the consignee and insuring that outgoing shipments conform to shipping regulations.
- Ensure that radiation monitoring and survey instruments are calibrated annually and operate properly.
- Operate a waste management program and document storage and disposal of all radiological waste, including decay in storage, and storage for shipment to licensed commercial vendors.
- Prepare procedures for and supervise the cleanup and documentation of spills or other emergency activities.
- Stop any unsafe operation or non-compliant activity and deny access of any individual to radiation sources in the interest of safety. Such action must be reported verbally and in writing to the EHS Director immediately.

### **3. Deans/Vice Presidents:**

- Implement and ensure compliance with this section.
- Enforce the procedures set forth in this section.
- Ensure that personal protective equipment and instruments are working properly and adequately performing their intended functions.
- Assist the RSO and EHS Director in solving radiation safety problems.
- Provide support as needed to the RSO and EHS Director in order to ensure compliance with existing laws and license requirements (maintenance of records, preparation of reports, etc.).

### **4. Authorized Users:**

- An Authorized User is a person whose training and experience have been reviewed and approved by the Maine Radiation Control Program, who is named on the license, and who uses or directly supervises the use of licensed material
- Ensure Authorized User is up to date on the UNE Radioactive Materials License prior to working with radioactive material.
- Provide written confirmation including documented research proving there is no practical less hazardous alternative to the desired radioisotope to be used.
- Keep his/her exposure as low as reasonably achievable (ALARA).
- Wear assigned personnel monitoring devices in an approved manner.
- Responsible for ensuring that the rules and regulations set forth by the RSO and this Safety section are implemented.
- Clean up minor spills immediately and carry out emergency procedures as required.
- Dispose of radioactive waste in the manner approved by this program.
- See that sources, containers, and the area are properly labeled and posted.
- Maintain required records and inventories.
- Prevent unauthorized persons from having access to radiation sources.
- Protect service personnel, allowing no maintenance or repairs of area facilities or equipment unless approved by the RSO.
- Notify the RSO of unexpected difficulties, exposures, accidents or spills.
- Explain the ALARA concept and the commitment to maintain exposures ALARA to all of those he/she supervises.

- Ensure that those under his/her supervision who are subject to occupational radiation exposure are properly trained and educated in good health physics practices and in maintaining exposures ALARA.
- Stop any unsafe operation or non-compliant activity and deny access of any individual to radiation sources in the interest of safety. Such action must be reported verbally and in writing to the EHS Director immediately.

**5. Radiation Workers/Students:**

- Radiation Workers include faculty, staff or students working with radioisotopes under the supervision of an Authorized User.
- The Radiation Worker must be 18 years of age or older and complete the same training as Authorized Users prior to entering an area where there is potential for exposure to radioisotopes.
- Radiation Workers who are subject to occupational radiation exposure must conduct all work under the direction and supervision of the Authorized Users. The Authorized User must be available at all times for consultation in a reasonable amount of time, i.e. Telephone, Skype. Before conducting any work, Radiation Workers must be properly trained and educated in good health physics practices and in maintaining exposures ALARA.
- All training must be documented and maintained by the RSO

**6. University-wide Safety Committee:**

- Acts as an advisory board for proposed procedure changes and other safety concerns in regards to radiation safety.

**SECTION 15.2**

**RADIATION PROGRAM POLICIES AND PROCEDURES**

**1. The ALARA Program:**

- The ALARA (As Low as Reasonably Achievable) program seeks to keep exposure to radioactive materials as low as reasonably achievable. The program objectives are accomplished in several ways:
- Prior to implementation of new procedures, Principal Investigators will confirm in writing, that the proposed material is the least hazardous material available or that alternatives are not reasonable or available.
- The UNE Radiation Control Program establishes a threshold that triggers further investigation by the RSO if levels of exposure exceed 10% above maximum permissible exposure values.
- The RSO will review procedures periodically and change them when it is apparent that it is both reasonable and achieves a lower possibility of exposure. Changes will be approved by the University-wide Safety Committee and forwarded to the State Radiation Control Office.

**2. Application for Authorization:**

- Authorization must be received before ordering or using radioactive material or equipment containing sealed sources of radioactive material.
- The requestor should have a thorough understanding of this safety section.
- A Request for Authorization to Use Radioactive Isotopes form, should be filled out and submitted to the RSO or the EHS Director and the University-wide Safety Committee (UWSC) for consideration. This form can be found in Appendix M of the Safety Manual or it can be obtained from the RSO.
- Revocation of Authorization: Authorization to use radioactive material may be revoked if, in the judgment of the EHS Director, good radiation safety practices are not followed. Items to be considered include:
  - Failure to comply with any of the rules put forth by this section
  - Frequent spillage or exposure incidences above acceptable limits
  - Disposal of material not in accordance with this section
  - Eating, drinking, smoking, or applying cosmetics in restricted areas.
  - Inappropriate handling of radioactive material

### 3. Authorization for New Procedures or Materials:

- Implementation of new procedures or use of new radioisotopes requires evaluation by the RSO well in advance of implementation or ordering.
- Authorized users will consult with and receive the approval of the RSO and the EHS Director during the planning stage of an experiment and prior to use of radioactive materials for a new procedure.
  - Authorized Users will document that use of the chosen radioisotope is the least hazardous material available or that alternatives are not reasonable or available.
  - Authorized users will evaluate all procedures before using radioactive materials to ensure that exposures will be kept as low as reasonably achievable (ALARA).

### 4. Ordering, Receiving, and Accountability of Licensed Materials:

- The following procedures are in place to ensure accountability of all radioactive materials licensed by the State of Maine that are owned and used by the University, under the control of the Radiation Safety Officer.
- Packages of radioactive material received at UNE are not expected to exceed Type A quantity<sup>2</sup>.
- All orders for licensed radioactive materials must be authorized by the RSO or EHS Director, who will ensure that possession limits will not be exceeded.
- Only the RSO and Authorized User are allowed to order radioactive materials.
- The Authorized User will notify the receiving department in advance of the delivery of any radioactive material.
- The Authorized User will make arrangements with the RSO to be present at time of delivery of radioactive material.
- Delivery of radioactive material is permitted only at the receiving area of the UNE Facilities Building on 605 Pool Street, Biddeford, Maine. The person who receives the package must follow the steps listed below. Instructions for Receiving Packages Containing Radioactive Material:
  - Visual Inspection: The package must be visually inspected for any signs of shipping damage such as crushed or punctured containers, signs of dampness or package degradation.
  - Prior to Leaving the Receiving Area:
    - The package must be monitored<sup>3</sup> prior to leaving the mailroom if any one of the following conditions exists:
      - The package has a Radioactive White I, Yellow II, or Yellow III label the package must be monitored for radioactive contamination on its' external surfaces.
  - The package contains greater than a Type A quantity of radioactive material, (i. e., > 1000 Ci of Hydrogen 3, or > than 30 Ci of Phosphorus 32, or > 60 Ci of Carbon 14.
  - There is evidence of degradation of package integrity, such as crushed, wet or damaged.
  - Damaged Packages:
    - Do not touch any package suspected of leaking.
    - Request the person delivering the package to remain until monitored by the RSO.
    - Contact the RSO immediately. RSO must complete Receipt of Radioactive Materials Form.
  - Undamaged Packages: Place the shipment in a secure area of the mailroom and contact the Authorized User or the RSO immediately.
    - The packing report will be entered into the RSO inventory records. These records will be kept for as long as the material is possessed or until 3 years after transfer or disposal.
    - Authorized users are required to keep a daily log of the amount of radioactivity used, disposed, and

<sup>2</sup> Type A quantity is equal to 60 Curies C-14, 1000 Curies H-3, or 30 Ci of P-32

<sup>3</sup> When certain conditions exist to warrant monitoring, it must be conducted within 3 hours of receipt of the package (if received during normal working hours) or not later than 3 hours from the beginning of the next working day if received after working hours.

that which remains. It is recommended that Authorized Users use the Stock Aliquot Log form.

- An inventory of materials on hand, and disposed will be conducted bi-annually.
- **Security of Licensed Materials:**
  - All locations where radioactive materials are stored or used must be secure from intentional or accidental unauthorized access or removal by following the requirements below:
    - Radioactive material will be stored in a locked container.
    - The source may be stored in a separate container with its own lock, or locks may be installed on refrigerators or freezers where the material is stored.
    - Laboratories in which radioisotopes are stored will be secure from unauthorized access whenever not occupied by an Authorized User, RSO, or Radiation Worker.
    - Areas where radioisotopes are used or stored must be pre-approved by the RSO and reflected in this Radiation Safety section, as part of License requirements.
    - Whenever licensed materials are in use in a controlled or restricted area, they must be under constant surveillance by the radiation worker to prevent others from becoming contaminated or exposed.

#### **5. Classification of Areas:**

- **Restricted Area** - An area shall be designated as "Restricted" where there are any radioactive materials used or stored in quantities less than that listed below.
  - A placard with the radiation symbol and the words "CAUTION - RADIOACTIVE MATERIALS" is required to be posted in "Restricted" areas.
- **Radiation Area** - An area shall be designated as a "Radiation Area" when a major portion of the body could receive in any one hour, a dose in excess of 5 millirems (0.05 mSv) at 30 centimeters from the source or from any surface that the radiation penetrates.
  - A placard with the radiation symbol and the words: "CAUTION - RADIOACTIVE MATERIALS" must be posted in areas considered to be Radiation Areas<sup>4</sup>
- **High Radiation Area** - An area shall be designated as a "High Radiation Area" when a major portion of the body could receive in any one hour a dose in excess of 100 millirems (1 mSv) at 30 centimeters from the source or from any surface that the radiation penetrates. For appropriate postings for High Radiation areas see 10-144A CMR 220, Part D, 28.

#### **6. Posting and Labeling Requirements:**

- A "NOTICE TO EMPLOYEES" Maine form HHE-845 must be posted in a conspicuous place wherever radioactive materials are used or stored.
- Emergency Procedures, including a contact list should be posted conspicuously in areas of radioactive material storage or use.
- Each container of licensed or registered material, including refrigerators and freezers, must be labeled with the radiation symbol and the words, "CAUTION, RADIOACTIVE MATERIAL" or "DANGER, RADIOACTIVE MATERIAL".

#### **7. Maximum Permissible Occupational Dose Limits:**

- Dose Limits for Adult Workers/Minors: Radiation Safety Controls are in place to protect radiation workers and others from occupational exposure. Following is a table of annual dose limits for occupationally exposed individuals.

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<sup>4</sup> UNE in general, does not expect to store or use enough radioactive material in any of its areas that would reach levels high enough to be designated Radiation Areas.

### Annual Dose Limits for Occupationally Exposed Workers

<b>Occupational Dose Limits</b>	
<b>Type of Limit</b>	<b>Annual Dose Limit</b>
Whole body <sup>a</sup>	5 TEDE <sup>b</sup> rems
Lens of Eye	15 rems
Thyroid	50 rems
Individual Organs	50 rems
Skin	50 rems
Extremities	50 rems
Minors	10% of those limits listed above
<sup>a</sup> Whole body = head, trunk, legs above knees, and arms above elbows. <sup>b</sup> TEDE = Total Effective Dose Equivalent = Sum of the deep-dose (external dose) + the committed effective dose equivalent (internal dose).	

- Workers who declare they are pregnant: Shall not receive in excess of 5 mSv (0.5 rem) dose equivalent to the embryo/fetus during the course of the entire pregnancy. See U. S. NRC Regulatory Guide 8.13 Instruction Concerning Prenatal Radiation Exposure.
- Members of the Public/Ancillary Personnel: Include those who live, work, study, or may be near locations where material is used or stored and employees whose duties do not include the use of byproduct material but may work in the vicinity where such materials are used or stored.
- The radiation dose received by individual members of the public may not exceed 1 mSv (1 rem) in one calendar year resulting from the licensee's possession and/or use of licensed materials.
- The radiation dose in unrestricted areas from external sources does not exceed 0.02 mSv (2 rem) in any one hour.
- Surveys will be conducted of radiation levels in unrestricted and restricted areas to demonstrate compliance with the dose limits for individual members of the public<sup>5</sup>. These surveys will be conducted whenever a new radioisotope is introduced or a procedure is significantly changed, at the discretion of the RSO and the EHS Director.

#### **8. Personnel Monitoring - Measure of External Dose**

- Personnel monitoring (dosimetry) will be in the form of film badges or finger badges provided by the Landauer Corporation or other National Voluntary Laboratory Accreditation Program (NVLAP) certified supplier.
- Personnel monitoring devices will be required for adult employees expected to exceed the Maximum Permissible Occupational Dose Limits by 10% or more.
- Minors and declared pregnant workers<sup>6</sup> will be assigned monitoring devices if likely to receive in 1 year, from sources external to the body, a deep dose equivalent in excess of 1 mSv (0.1 rem).
- See table on next page:

<sup>5</sup> For more information on Dose Limits for Individual Members of the Public, reference 10-144A CMR 220 § D.14.

<sup>6</sup> Declared pregnant worker is defined as a woman who has voluntarily informed her employer, in writing, of her pregnancy and the estimated date of conception (10 CFR 20.1003). See x, Instructions Concerning Prenatal Radiation Exposure.



<b>Conditions Requiring Monitoring</b>	
<b>Type of Limit</b>	<b>Adult / Minor Dose Limits</b>
Whole body <sup>a</sup>	0.5 TEDE <sup>b</sup> rems / 0.1 rem
Lens of Eye	1.5 rems / 0.15 rem
Thyroid	5 rems / 0.5 rem
Individual Organs	5 rems / 0.5 rem
Skin	5 rems / 0.5 rem
Extremities	5 rems / 0.5 rem
<sup>a</sup> Whole body = head, trunk, legs above knees, and arms above elbows.	
<sup>b</sup> TEDE = Total Effective Dose Equivalent = Sum of the deep-dose (external dose) + the committed effective dose equivalent (internal dose).	

- If an employee is assigned a personnel monitoring device, it shall be worn at all times while working with or around radioactive materials.
- When not in use, personnel monitoring devices will be stored outside of restricted areas where radioactivity levels are equal to background.
- Personnel monitoring devices will be sent in for readings on a quarterly basis.
- Reports of personnel monitoring device results will be reviewed by the Authorized Users and forwarded to the RSO for filing.
- Workers who are monitored will be provided with the results of their monitors on an annual basis, unless dose limits are exceeded, at which time the employee will be notified immediately.
- Determination of Prior Occupational Dose will be made for each individual required to be monitored. The determination shall include:
  - The occupational radiation dose received during the current year; and,
  - Records of cumulative occupational radiation dose<sup>7</sup> will be obtained if possible.
- Bioassay - Measure of Internal Dose: Bioassay procedures may be instituted by the Radiation Safety Officer when internal contamination is suspected, (ingested or absorbed) or if a Radiation Worker handles more than 8 mCi of H-3 (liquid) at a time. Refer to Bioassay Requirements for Tritium.
- Surveying - Measure of Residual Contamination:
  - Surveys shall be conducted and results of the surveys and equipment calibration records must be retained for 3 years after the record is made. The following surveys are required:
    - Conclusion of Sessions: A survey of the workbench and personnel survey must be conducted at the end of each session of experiments (except for Tritium use).
    - Survey to be conducted at the conclusion of each procedure and every time the researcher leaves the workspace for any reason. Survey forms can be found by contacting EHS or the RSO for the Radiation Survey Form.
    - Bi-Monthly Surveys: A survey of the work-bench will be conducted by Tritium users utilizing the swipe test and scintillation counting. Survey forms can be found by contacting EHS or the RSO for the Radiation Survey Form.
    - Quarterly Surveys: Surveys of each laboratory space utilizing radioactive materials will be conducted by the RSO on a quarterly basis.
    - Random Surveys: Surveys may be needed in order to decommission a piece of equipment or a laboratory space, or to monitor a package containing radioactive material. Detection Equipment & Calibration: Instruments and equipment used for quantitative radiation measurements shall be calibrated for the type of radiation being measured at intervals not to exceed 12 months.

<sup>7</sup> Appropriate documentation is described in detail in 10-144A CMR 220, D.10.C.

## 9. Laboratory Safety Procedures:

- Each laboratory area where radioactive materials are used or stored will follow the safety precautions listed below:
  - Wear a laboratory coat or other protective clothing at all times in areas where licensed materials are used. When not wearing the lab coat, it should be kept in a designated area near the restricted area.
  - Wear two pairs of disposable gloves at all times when handling licensed materials.
  - Change gloves often during a procedure to minimize exposure and to avoid spread of contamination.
  - After each procedure, and before leaving the area, monitor hands, shoes and clothing for contamination (performed in a low-background area)
  - Do not eat, drink, smoke, or apply cosmetics in any area where licensed materials are used or stored.
  - Wear personnel monitoring devices, if required, at all times while in areas where licensed materials are used or stored.
  - Dispose of radioactive waste only in designated, labeled and properly shielded receptacles.
  - Never pipette by mouth.
  - xi. Store radioactive solutions in clearly labeled containers.
  - Keep stock solutions closed and secure at all times.
  - Perform dry runs prior to the performance of unfamiliar procedures, in order to preclude unexpected complications.
  - Request the presence of the RSO during new procedures performed for the first time.
  - Secure licensed material when it is not under the constant surveillance and immediate control of the user(s).
- Special Procedures for Phosphorus-32 (P-32):
  - Low-density 10mm plastic shielding around workspace is required in order to keep Bremsstrahlung radiation to a minimum.
  - Absorbent, disposable material covering the surface area of the workbench is required.
  - Radiation "frisk" surveys for contamination on the person and the workbench are mandatory after each use of radioactive material. Results of each survey must be documented.
  - Extremity monitors are recommended for procedures that involve one millicurie or more of P-32<sup>8</sup>.
  - The use of eye protection is required.
  - The use of wrist protection is recommended.
- Decommissioning of Equipment or Laboratories:
  - If any laboratory, equipment or restricted space having been used for the storage or handling of radioactive materials is no longer used for that purpose, it must be decommissioned prior to being disposed of or transferred for use for non-radioactive purposes.
  - The decommissioning process includes testing for contamination, and decontaminating where necessary.
  - Documentation of the results will be filed with the Radiation Safety Officer.
  - Equipment or spaces will not be released for non-radioactive use or disposal unless testing results are equal to background, or the RSO approves of release.

## 10. Waste Disposal and Proper Waste Management:

- Waste Storage must be Secure:
  - Storage areas for radioactive waste must be secure at all times to protect against unauthorized removal or unintentional exposure. Storage areas must be posted with the appropriate signage, at a minimum "CAUTION, RADIOACTIVE MATERIALS".

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<sup>8</sup> This requirement and others in this section are based upon the Nuclear Regulatory Commission's document titled NUREG – 1556, Vol. 7, P.

- Waste Minimization:
  - Radioactive waste is extremely expensive to have disposed. Therefore, minimization of radioactive waste is a priority in order to keep costs as low as possible. Waste minimization begins by keeping non-radioactive waste out of the radioactive waste stream. Procedures will be monitored to ensure non-radioactive waste is not being mixed with radioactive waste. Non-radioactive containers and packing materials should have labels removed or destroyed prior to disposal.
- Waste Removal from Laboratories:
  - Movement of radioactive waste from laboratories to storage areas must be performed or at least overseen by the RSO.
  - Authorized Users should contact the RSO in advance to arrange for removal of radioactive waste, unless they have been given express authorization to move waste.
  - Routes of delivery of radioactive waste to the appropriate storage area should be as short and direct as possible. Occupational and public exposure must be taken into account in considering the best possible delivery route.
  - Each delivery of radioactive waste to storage areas must be documented appropriately.
  - Temporary Storage of Radioactive Waste Awaiting Shipment:
    - Long-lived waste (greater than 120 day half-life) will be stored on site until there is enough to warrant a cost effective shipment offsite.
    - Solidify liquid radioactive waste - All waste planned for shipment must be in the form of solid waste.
      - Liquid waste planned for shipment offsite will be solidified utilizing an absorbent material such as vermiculite or clay.
      - All solidified waste will be double bagged.
      - Vials of scintillation waste may be placed in absorbent material. Caps may be left on the vials, as long as they are crushed in the waste storage room, prior to being shipped.
      - The volume of solid radioactive waste should be minimized to the greatest extent possible. Therefore all waste will be crushed whenever feasible prior to final shipment.
      - Solid waste will be shipped by a licensed hazardous material transporter, and transferred to an authorized recipient as provided by D. 38 of the Maine Rules Relating to Radiation Protection or the U. S. Department of Energy.
  - Decay in Storage (DIS):
    - Liquid or solid wastes with a half-life of 120 days or less may be decayed (under supervision of the RSO) for 10 half-lives and then disposed as non-radioactive waste<sup>9</sup>.
    - Containers - DIS waste must be stored in suitable, well-marked containers that provide adequate shielding<sup>10</sup>. They must also be of appropriate size to make transport as easy and efficient as possible. Containers will be pre-approved by the RSO.
    - Seal and Label - A full DIS container of waste must be sealed and labeled by the Authorized User. The label will include the following pieces of information:
      - Name of the Authorized User; and
      - Name of the isotope; and
      - Date waste is moved into Decay in Storage Area.
      - Date when 10 half-lives of the longest lived radioisotope will have transpired.
    - Segregation - Short-lived waste planned for DIS will be stored separately from long-lived waste to

<sup>9</sup> Reference Model Procedure for Disposal by Decay in Storage, NUREG-1556, Vol. 7.

<sup>10</sup> Adequate shielding for DIS containers is defined as Exposure at 30 cm from the container must be less than or equal to 2mrem/hr (0.02mSv/hr).

be shipped offsite. Also, liquid waste must be stored separately from solid waste.

- Procedures for certification of non-radioactive waste.
  - Check radiation detection survey meter for proper operation.
  - Remove any shielding from around the container.
  - Survey the contents of each container in a low background area.
  - Monitor all surfaces of the container.
  - Document the meter reading, date, and container in storage area DIS Log Book.
- If surveys indicate residual radioactivity, return the container to DIS area.
  - If surface readings are indistinguishable from background, the contents shall be certified by the RSO to be non-radioactive and scheduled for disposal as ordinary rubbish or wastewater (after it has been determined that it is not a hazardous waste).
  - Containers of certified non-radioactive waste scheduled for disposal must have all radioactive waste labels removed or destroyed.

## SECTION 15.3

## EMERGENCY PROCEDURES

### 1. Emergency Response:

- A Radioactive Material Incident is defined as any spill or accident involving possible bodily contamination or ingestion of radioactivity, over-exposure to radiation, contamination of equipment, spread of contamination, or difficulty in cleaning up a contaminated area. Those spills or accidents involving bodily injury should be reported to the Security Department and shall seek emergency medical attention immediately.
- Where a Radioactive Material Incident occurs, the following steps should be followed :
  - Take immediate steps to control the spread of radioactive contamination,
  - Decontaminate personnel and the immediate area, and
  - Notify the Radiation Safety Officer (RSO) or the EHS Director immediately.
- Additional Requirements: As noted earlier in this section, Emergency Procedures (including a contact list) and an Emergency Spill Kit shall be available in all areas where radioactive materials are used or stored.
- Reporting and Notification of Incidents:
  - In the case of any unusual occurrence or incident, the Authorized User should contact the Radiation Safety Officer immediately, who will then notify the State of Maine Radiation Control Program Inspectors if applicable in accordance with the rules below<sup>11</sup> :
  - Reports of Stolen, Lost, Missing Licensed or Registered Sources:
    - An immediate telephone report to the licensing agency is required if an amount greater than or equal to 1000 mCi H-3, or 100 mCi C-14, or 10 mCi P-32 is lost, stolen or missing under such circumstances that it appears that an exposure could result to individuals in unrestricted areas;
    - A telephone report shall be made to the licensing agency within 30 days, if material found missing in an aggregate quantity greater than 10 mCi H-3, or 1 mCi C-14, or 100 uCi P-32.
    - An immediate telephone report shall be made to the licensing agency for a stolen, lost, or missing radiation machine.
    - A written report to the licensing agency is required within 30 days of making any telephone report.

### 2. Notification of Incidents:

- Immediate Notification will be made to the licensing agency where an individual receives 25 rem total effective dose, or 75 rem lens dose equivalent, or 250 rads of a shallow dose equivalent to skin or extremities, or total organ dose equivalent.

<sup>11</sup> This section found in Maine Rules Relating to Radiation Protection, 10-144A CMR 220, D.52.

- Twenty-four Hour Notification for loss of control of a licensed or registered source that may have caused or threatens to cause an individual to receive in a period of 24 hours a total effective dose equivalent exceeding 5 rem, or a lens dose equivalent exceeding 15 rem, or a shallow-dose equivalent to skin, extremities or total organ exceeding 50 rem.
- Reports of Exposures: Report of exposures, radiation levels and concentrations of radioactive material exceeding the limits require written reports to follow up on any of the notifications listed above or in the case of any occupational dose limit exceeded.
- Reports to Individuals: Reports to individuals will be made of any incidence of overexposure of the occupational exposure limits. The report shall be made simultaneous to the report to the licensing agency<sup>12</sup>.

## SECTION 15.4

## TRAINING AND RECORDKEEPING

### 1. Training:

- Individuals whose assigned duties involve exposure to radiation and/or radioactive material (from both licensed and unlicensed sources), and in the course of their employment are likely to receive in a year<sup>13</sup> an occupational dose in excess of 100 mrem (1mSv) shall be trained by the Radiation Safety Officer. The following general subjects will be included in the training.
  - Authorized Users, Radiation Workers Training Topics:
    - Health protection problems associated with exposure to radiation and precautions and procedures to minimize exposures.
    - Understanding of the radionuclides used in the laboratory and their properties with relation to safety issues (i. e., shielding requirements, energies, half-life, units of measure, etc.).
    - Understanding of UNE procedures, such as ordering, receiving, opening packages, use, storage, transfer, and disposal.
    - Responsibility to report promptly to the licensee any condition which may lead to or cause a violation of the license, or unnecessary exposure.
    - Emergency Response Procedures.
    - Advised as to the radiation exposure reports, which workers may request, if they are being monitored.
    - Proper use and operation of detection equipment that will be used in the laboratory (i. e., GM or liquid scintillation instruments).
    - Record keeping requirements specific to the radionuclide.
    - Posting and labeling requirements for radionuclides to be used.
    - License limits and license requirements of the UNE Radioactive Material License.
  - Ancillary Personnel Training Topics:
    - Training is required for ancillary personnel, such as custodians or clerks who may enter or work near restricted areas from time to time.
    - Their training must be adequate to allow them to recognize radiation hazards and avoid or minimize their exposure to radiation and radioactive materials. Specifically, ancillary personnel will be training on the following subjects:
      - Health protection problems associated with exposure to radiation.
      - Precautions or procedures to minimize exposures and the protective devices utilized.

<sup>12</sup> For additional reporting requirements and contents of reports, see 10-144A CMR 220, D53-D58.

<sup>13</sup> Licenses must take into consideration assigned activities during normal and abnormal situations involving exposure to radiation and/or radioactive materials. The extent of the training must be commensurate with the potential radiological health protection problems present in the workplace. [10 CFR §19.12].

- Ordering, receiving, opening packages, use, storage, transfer, and disposal procedures at UNE.
  - Responsibility to report promptly to the licensee any condition which may lead to or cause a violation of the license, or unnecessary exposure.
  - Response to unusual occurrences such as spills or emergency activities.
- **Frequency of Training:**
    - Training shall be conducted at frequencies listed below:
      - Prior to assuming duties with, or in the vicinity of, radioactive materials.
      - Whenever there is a significant change in duties, regulations, or the terms of the license.
      - Annually (refresher training).
- 2. Record Keeping:**
- **Provisions of the Radioactive Control Program:**
    - License provisions including those referenced by the license, such as the Radiation Control Program Manual, shall be retained until the license is terminated.
  - **Training records of topics covered by this section** will be maintained by the Department of Human Resources for a minimum of three years, unless otherwise specified.
  - **Annual Audit of Radioactive Control Program:**
    - The Radiation Safety Officer will conduct an annual audit of the Radiation Safety Program, including on-site observations of practices and procedures. This record will be kept on file for 3 years after the record is made.
  - **Receipt, Transport, Storage, and Disposal Records:**
    - Shall be retained until the license is terminated.
  - **Radioactive Material Use Log:**
    - Will be entered into the RSO inventory records. These records will be kept for as long as the material is possessed or until 3 years after transfer or disposal.
  - **Bi-Annual Inventory of Radioactive Materials:**
    - An inventory of all radioactive materials (including waste) shall be conducted and documented by the RSO at least twice annually. The bi-annual inventory shall be retained for 3 years after the record is made.
  - **Personnel Monitoring:**
    - If conditions require individual monitoring of external and internal occupational dose<sup>14</sup> these records must be recorded at intervals not to exceed one year, and must be retained until the license is terminated. At that time, the records will be stored permanently, or transferred to the licensing agency.
- 3. Laboratory Monitoring, Surveys, Calibration:**
- **Records of Routine Nature** - Such as bi-weekly, and quarterly laboratory surveys, and records of instrument calibration shall be kept for 3 years after the record is made.
  - **Non-routine Records:**
    - Records of the results of surveys conducted, measurements taken, or calculations used to determine individual dose equivalents from external or internal doses, or releases, or bioassays, or air sampling surveys shall be retained until the license terminates.
    - Upon termination, the licensee shall store these records permanently, or transfer them to the licensing agency.

<sup>14</sup> Conditions requiring individual monitoring of external and internal occupational dose can be found at Maine Rules Relating to Radiation Protection, 10-144 CMR 220 Part D.18.

**SECTION 16.0****HEARING CONSERVATION PROGRAM****1. Introduction**

- Per OSHA 29CFR1910.95 Occupational Noise Exposure standard, protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in the table below:

TABLE G-16 - PERMISSIBLE NOISE EXPOSURES (1)

Duration per day, hours	Sound level dBA slow response
8.....	90
6.....	92
4.....	95
3.....	97
2.....	100
1 1/2 .....	102
1.....	105
1/2 .....	110
1/4 or less.....	115

Footnote(1) When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions:  $C(1)/T(1) + C(2)/T(2) + \dots + C(n)/T(n)$  exceeds unity, then, the mixed exposure should be considered to exceed the limit value. Cn indicates the total time of exposure at a specified noise level, and Tn indicates the total time of exposure permitted at that level. Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

Reference: [www.osha.gov](http://www.osha.gov)

- 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.”
- 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.

**SECTION 16.1****RESPONSIBILITIES****1. UNE Environmental Health and Safety Department (EHS):**

- Determine areas where noise exceeds 85 decibels in an 8-hour TWA by measuring sound levels and testing areas where employees feel there is excessive noise. (See Appendix V)
- UNE will provide employee’s the opportunity to get regular Audiometric Testing conducted at no charge to the employee by a licensed professional through an Audiometric Testing Program setup by EHS in conjunction with Human Resources, Industrial Hearing, and Concentra.

- Provide training for employee's exposed to an 8-hour TWA of 85 decibels or more.
- Provide several types of hearing protection to employees at no cost to the employee.
- Make the Hearing Conservation Program accessible to all employees.
- All recordkeeping for the Hearing Conservation Program will be done by EHS and Human Resources.

## 2. Employee

- Report any noisy or loud operations that the employee feels may be above the 8-hour TWA of 85 decibels.
- Attend Audiometric testing if required.
- Attend annual training sessions on the hearing conservation program.
- Where hearing protection when required/mandated by OSHA and/or the UNE EHS department.
- Request new hearing protection if employee's hearing protection is lost, damaged, or out of stock.

## SECTION 16.2

## HEARING CONSERVATION PROGRAM POLICIES AND PROCEDURES

### 1. Scope:

- The Hearing Conservation Program is designed to protect the hearing of all employees and students on the UNE campus by ensuring that if any person is exposed to an 8-hour TWA of 85 decibels or more, regular audiograms and hearing protection are provided.

### 2. 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.
- 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.
- 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.
- Instruments used for monitoring will be calibrated to ensure accuracy.
- 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.
- The EHS department will notify all exposed employees if they are at or above the 8-hour TWA of 85 decibels.
- Exposed employees have the right to observe all monitoring.

### 3. 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.
- Audiometric testing must be performed by a licensed or certified audiologist, otolaryngologist, or other qualified physician.
  - 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).
    - 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).
    - The employee will be notified to avoid high levels of noise outside of the workplace 14 hours before the audiogram.
    - 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.
- UNE will provide the following information to the technician performing the audiogram:
  - A copy of the requirements set forth by the OSHA 29CFR1910.95 Hearing Conservation Standards.
  - A copy of the baseline audiogram and most recent audiogram of the employee being evaluated.
  - The technician will provide:
    - Measurements of background sound pressure levels in the audiometric test room.
    - Records of audiometer calibrations.
- Standard Threshold Shift:
  - A standard threshold shift is defined as: “a change in hearing threshold relative to the baseline audiogram of an average of 10dB or more at 2000, 3000, and 4000 Hz.” 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.
- Revised Baseline:
  - An annual audiogram may be substituted for a baseline audiogram at the discretion of the audiologist evaluating the audiogram if:
    - The standard threshold shift revealed by the audiogram is persistent or
    - The hearing threshold shown in the annual audiogram indicates improvement over the baseline audiogram.
- Audiometric Testing Requirements and Procedures:
  - Audiometric tests shall be pure tone, air conduction, hearing threshold examinations, with test frequencies including as a minimum 500, 1000, 2000, 3000, 400, and 6000 Hz. Tests for each frequency will be taken separately for each ear.
  - Audiometric tests will be conducted with audiometers meeting the American National Standard Specification for Audiometers, S3.6-1969.
  - Audiometric exams will be given in a room meeting the OSHA requirements listed in Appendix D of the OSHA Hearing Conservation Standard.
  - The Audiometer must be properly calibrated each day before use to ensure there are no distortions or unwanted sounds. (Deviations of 10 decibels or greater require acoustic calibration). Audiometers should be calibrated annually.

#### **4. 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.

## SECTION 16.3

## TRAINING AND RECORDKEEPING

### 1. Training Program

- It is UNE's responsibility to provide a Hearing Conservation Training program to all employees exposed to an 8 hour TWA of 85 decibels or more and make sure that all employees attend the training program, which may be given by the hearing testing vendor at the time of the audiogram.
- Once an employee is part of the Hearing Conservation program, they are to attend an annual training presentation for Hearing Conservation. Any information that has changed will be updated and included in the annual training.
- The following topics will be covered in the 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.
- All training materials are available to the employee's at any time upon request through EHS.

### 2. Recordkeeping

- UNE will keep the following records on file in the Human Resources Department or EHS:
  - Exposure measurements: An accurate record of all employee exposure measurements.
  - Audiometric testing results and records which include:
    - The name of the employee and their job title
    - The date of the audiogram
    - The examiner's name
    - The date of the last calibration of the audiometer
    - The employee's most recent noise exposure assessment.
    - The measurements of the background sound pressure levels in audiometric testing rooms.
  - The noise exposure measurement records shall be obtained for 2 years.
  - The audiometric test records will be retained for the duration of the employee's employment and are available through the Human Resources Department.
  - Records are available to employees upon request.

**Hearing Protection Required Areas: See Appendix V**

<b>SECTION 17.0</b>	<b>LABORATORY SAFETY</b>
<p><b>1. Introduction:</b></p> <ul style="list-style-type: none"> <li>• This section details safety practices and standards at the University of New England designed to protect laboratory employees, while they are working in a laboratory, from harm due to potential exposure to hazardous chemicals. This section applies to all laboratories that use hazardous materials and supersedes the Hazard Communication section of the Safety Manual.</li> <li>• Each college that stores and uses hazardous chemicals in a laboratory setting will identify at least one Chemical Hygiene Officer (CHO) to serve as a focal point for laboratory health and safety activities within the unit and as liaison with Environmental Health and Safety. Colleges that are made up of a number of large laboratory-based departments are urged to assign laboratory safety officers within each department.</li> </ul>	
<b>SECTION 17.1</b>	<b>RESPONSIBILITIES</b>
<p><b>1. Environmental Health and Safety Department:</b></p> <ul style="list-style-type: none"> <li>• Works with all Chemical Hygiene Officers and Department Heads to ensure that all labs have safety policies and procedures in place.</li> <li>• Works with all Chemical Hygiene Officers and Department Heads to ensure that all students, researchers, staff and faculty are trained in laboratory safety if they will be working in any UNE laboratory.</li> <li>• Updates and revises all policies and procedures for laboratory procedures annually or as needed.</li> </ul> <p><b>2. Dean(s):</b></p> <ul style="list-style-type: none"> <li>• Create a protocol to define laboratory supervision for students working after hours in their college.</li> </ul> <p><b>3. Department Chairs:</b></p> <ul style="list-style-type: none"> <li>• Enforce the protocol set by the Dean regarding supervision for students working in laboratories after hours.</li> </ul> <p><b>4. Laboratory Faculty:</b></p> <ul style="list-style-type: none"> <li>• Ensure that laboratory equipment capable of creating a fire or flood is in the off position when leaving the laboratory (this includes all gas nozzles, Bunsen burners, and faucets).</li> <li>• Laboratory Fume Hood sashes should be in the closed position when the fume hoods are not in use.</li> <li>• Follow all laboratory safety rules and regulations set forth by UNE.</li> <li>• Attend all required laboratory safety training sessions as needed.</li> <li>• Suggest any changes or updates to the laboratory safety plan as needed.</li> </ul>	
<b>SECTION 17.2</b>	<b>LABORATORY POLICIES AND PROCEDURES</b>
<p><b>1. General Safety:</b></p> <ul style="list-style-type: none"> <li>• Generally, it is prudent to avoid working alone in a laboratory. Under normal working conditions, you should make arrangements with individuals working in separate laboratories, or Security personnel, to carry out a personal safety check periodically. Do not undertake experiments known to be hazardous when working alone.</li> <li>• Under some conditions, special rules may be necessary. The supervisor of the laboratory has the responsibility for determining whether the work requires special safety precautions, such as having a second person present during a particular operation.</li> <li>• Know the materials you are working with (e.g. chemical, biological, radioactive): Refer to the written laboratory protocols and review the Safety Data Sheets (SDS) for chemicals. Consider the toxicity of materials, the health and safety hazards of each procedure, the knowledge and experience of laboratory personnel, and the safety equipment that is available.</li> </ul>	

- Know the location of safety equipment and emergency procedures in your area.
- Always wear appropriate clothing including long pants, closed toed shoes (no skin showing), and personal protective equipment, (e.g. safety glasses, lab coats, gloves) in the laboratory. (The only exception being the Marine Science Center field labs).
- Remove personal protective equipment and wash areas of exposed skin before leaving the laboratory.
- Before and After Hours work in laboratories:
  - For safety reasons, working alone in laboratories before or after hours is not encouraged whether you are faculty, staff, student or a volunteer and should only be done on an as- needed basis.
  - Normal working hours are considered 7:00am to 6:00pm Monday through Friday. If you doing work in a laboratory setting before 7:00am or after 6:00pm on a week day or anytime on weekends, you must follow the Before and After Hours laboratory policy.
  - Laboratory access will be regulated by the Supervisor of the lab area, except when in use by another program or otherwise posted as closed.
  - Laboratory priority is given to scheduled classes and examination preparation. Signs will be posted when classes are in session and when exams are scheduled. All student access will be denied when either of these events occurs.
  - University of New England identification cards and personal reference numbers (PRNs) allow UNE students and employees access to lab areas with card swipe access.
  - Card access is monitored through the electronic lock outside of the lab door. Each individual entering the lab must swipe his or her ID card each time entry is desired.
  - If a lab does not have card swipe access, than only an authorized key holder with their own set of assigned keys may access the lab before or after hours. That key holder must be present if allowing another individual access. The key holder is responsible for the condition of the lab area and for the individual that is using the lab space once they grant another individual before or after hours access.
  - Please follow the guidelines listed here to assure continued before and after hours usage of UNE labs:
    - Work in labs should only be conducted with prior approval from faculty, staff, or a supervisor.
    - All individuals working in labs must complete the required laboratory safety training set forth by the Environmental Health and Safety Department on Blackboard.
    - Protocols for supervision may be established by the Dean's Office in consultation with the Department Chairs. Any protocols set forth by the Dean's office of an Individual College must be as stringent or more stringent than the policies set forth in the UNE Safety Manual. Per federal OSHA regulations, supervision is mandatory when working with hazardous materials.
    - For all laboratory procedures being conducted before hours, after hours or on weekends, the Department of Safety and Security must be notified. To notify Security that you are working outside of business hours in the lab you simply call the Security desk and tell them who you are and where you will be working. UNE Safety and Security reserve the right to ask any individual to vacate a lab space per their instruction. This must be done in a safe and orderly manner.
    - Do NOT allow any unauthorized persons entry into the lab. The electronic lock records the identification of the person who swiped the lock. Those individuals will be held responsible for the condition of the laboratory, its occupants and its contents. Responsibility for any damages will be split between all who gained entry via the electronic lock. Professional conduct is mandatory at all times. In buildings that do not have card swipe access, but have key entry systems only authorized persons that hold their own personal set of lab keys are allowed in the lab before or after hours, or the key holder must be present to supervise.

- Safety requirements dictate that there must be at least TWO individuals in the lab at all times when working with hazardous materials. This is to ensure the safety of the occupants. Please keep your personal safety in mind.
- The appropriate level of personal protective equipment must be worn at all times. All EHS lab rules **MUST** be followed after hours.
- At the end of the evening, clean up your workspace and return materials to their rightful location. Please be considerate of your classmates and instructors as well as the housekeeping staff. It is everyone's responsibility that the laboratory be maintained in good working order.
- If you are asked to leave, please do so quickly and in a reasonable manner. Be sure to clean your work area and leave the lab in good condition for others.
- Report ALL injuries and accidents immediately to the Department of Safety and Security (x366).
- Accident and Injury Report forms are available through Security and Human Resources. Forms must be submitted to Human Resources within 24 hours of the incident and must be delivered immediately electronically or delivered by hand. [Sending forms through Campus Mail does not guarantee delivery in a 24 hour period.] Human Resources will then forward the report to the EHS office for additional review and recommendations. The Supervisor may be notified to address any additional problems or concerns.
- **FAILURE TO COMPLY WITH ANY OF THESE GUIDELINES WILL RESULT IN LOSS OF AFTER-HOURS ACCESS.**
- When working with toxic and/or hazardous chemicals, use a properly operating fume hood. Fume hoods should be checked for correct flow before beginning work. Do NOT disable fume hood alarms or alter them in any way under any circumstance. If they seem to be malfunctioning, notify lab manager right away and put in a work order with Facilities to have it repaired or replaced.
- No food, beverage, tobacco, or cosmetic products are allowed in the laboratory or chemical storage areas at any time. Cross contamination between these items and chemicals or samples is an obvious hazard and should be avoided.
- Keep work areas clean and uncluttered at all times.
- Do not leave reactions unattended.
- Never pipette by mouth. Always use a bulb or pump to pipette.
- Wash promptly whenever a chemical has contacted skin.
- No sandals or open toed shoes will be allowed in any laboratory. No footwear exposing any skin will be allowed in the laboratory including high heel shoes and "ballet flats". (The only exception being the Marine Science Center labs where there are no chemical or biological hazards involved in operations).
- Inhalation is one of the four modes of entry for chemical exposure. Sniff-testing should not be done, unless specified by the lab procedure.
- It is the responsibility of everyone working in the laboratory to make certain that the laboratory is left clean after work is performed
- Children will not be allowed in areas where hazardous materials or biological agents are present (see "Children in laboratories" portion of this section).
- Animals, except for those that are the subject of experimentation, are to be excluded from all laboratory areas. [Emotional Support Animals (ESAs) are NOT permitted in any laboratory building on campus.] Use of Trained Service Animals **MUST** be evaluated by Student Access Services and EHS to protect the animal from any hazards that may be present.
- 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.

- The area must be kept neat and clean at all times.
- Each laboratory employee and student will be responsible for maintaining the cleanliness of his/her area.
- Reagents and equipment items should be returned to their proper place after use. This also applies to samples in process.
- Contaminated or dirty glassware should be placed in specific cleaning areas and *not allowed to accumulate*.
- 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.
- Counter tops should be kept neat and clean. Bench tops and fume hoods should not be used for long-term chemical storage.
- Stored items, equipment, and glass tubing will not project beyond the front of shelf or counter limits.
- Stored items or equipment will not block access to the fire extinguisher(s), safety equipment, or other emergency items.
- Stairways, hallways, passageways/aisles and access to emergency equipment and/or exits must be kept dry and not be obstructed in any fashion, including storage, equipment, phone or other wiring.
- 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
- Materials stored near aisles will be restrained to prevent their falling.
- All containers must be dated and labeled with at least the identity of the contents and the hazards those chemicals present to users (for additional labeling guidelines, refer to Section 8 of this Manual).
- No material will be stored upon or hung from suspended ceilings. No ceiling tiles shall be removed.
- Electrical:
  - The typical laboratory requires a large quantity of electrical power. This increases the likelihood of electrically-related problems and hazards. One must address both the electrical shock hazard to the facility occupants and the fire hazard potential. The following recommendations are basic to a sound electrical safety program in the laboratory.
    - All electrical equipment will be properly grounded.
    - All electrical equipment will be UL listed, grounded, and approved by Facilities Management. (See Section 6 on Electrical Protection for more detailed information).
    - Sufficient room (36 inches) for work must be present in the area of breaker boxes. All the circuit breakers and the fuses will be labeled to indicate whether they are in the on or off position, and what appliance or room area is served. Circuit breakers must be properly rated.
    - Equipment cords/plugs, appliance cords/plugs, and power strips will be in good condition.
    - Extension cords will not be used as a substitute for permanent wiring. They are only authorized for temporary use and must be approved by Facilities and/or EHS staff.
    - Electrical cords or other lines will not be suspended unsupported across rooms or passageways.
    - Multi-outlet plugs will not be used unless they have a built-in circuit breaker. This causes overloading on electrical wiring, which will cause damage and possible overheating.
    - All building electrical repairs, splices, and wiring will be performed by the Facilities Management Department.
- Vacuum Operations:
  - In an evacuated system, the higher pressure is on the outside, rather than the inside, so that a break causes an implosion rather than an explosion. The resulting hazards consist of flying glass, spattered chemicals, and possibly fire. The following is a list of precautions to be taken when conducting vacuum

operations.

- When working with a vacuum, be aware of implosion hazards.
- Apply vacuum only to glassware specifically designed for this purpose, i.e. e., heavy walled filter flasks, desiccators, etc.
- Never evacuate scratched, cracked, or etched glassware. Always check for stars or cracks before use.
- Vacuum glassware which has been cooled to liquid nitrogen temperature or below should be annealed prior to reuse under vacuum. Rotary evaporator condensers, receiving flasks, and traps should be taped or kept behind safety shields when under a vacuum.
- After completion of an operation in which a cold trap has been used, the system should be vented. This venting is important because volatile substances that have been collected in the trap may vaporize when the coolant has evaporated and cause a pressure buildup that could blow the apparatus apart.

- Handling Glassware:

- Glass breakage is a common cause of injuries in laboratories.
- Only glass in good condition will be used.
- Discard or send for repair all broken, chipped, starred or badly scratched glassware in marked “broken glass” containers only.
- Hand protection should be used when picking up broken glass.
- The following precautions should be taken when working with glass.
  - Clean all glassware before sending for repair
  - When using glass tubing, all ends should be fire polished.
  - Lubricate tubing with glycerin or water before inserting into rubber stoppers or rubber tubing.
  - Protect hands with leather gloves when inserting glass tubing.
  - Hold elbows close to the body to limit movement when handling tubing.
  - Do not store glassware near the edge of shelves.
  - Store large or heavier glassware on lower shelves
  - Use glassware of the proper size. Allow at least 20% free space. Grasp a three-neck flask by the middle neck, not a side neck.
  - Conventional laboratory glassware must never be pressurized.

- Laboratory Equipment: The following safety equipment should be available for laboratory personnel working with hazardous materials.

- Drench Showers: Drench showers and other emergency wash systems are used in an emergency to flush chemicals that have accidentally come in contact with laboratory personnel. In order to wash the body properly, clothing should be removed as water is applied. The drench shower can be used to extinguish a clothing fire, but this is not recommended if the shower is more than a couple of feet away.
  - Three square feet of space is required beneath the shower.
  - The area will be kept free of all obstacles.
  - EHS inspects drench showers each semester for proper flow and operation.
  - A tag or card is hung on the unit, indicating whether the shower is properly functioning or out of service. Facilities Management is then notified if the shower is out of service so that necessary repairs can be made.
  - Once repairs are made, Facilities Management notifies EHS and the drench shower is checked for proper flow and operation.
  - Drench hoses and showers should not be altered or removed in any lab space without the approval of the Environmental Health and Safety Department.

- Eye and Face Washes:
  - The best treatment for chemical splashes of the eye and face is immediate flushing with copious amounts of water for 15 minutes.
  - Eye and Face Washes are equipped with a stay-open ball valve.
  - All plumbed eye and face washes should be flushed by laboratory personnel on a weekly basis by allowing the water to flow for 3 minutes, to remove stagnant water from the pipes.
  - Eyewash stations should not be altered or removed in any lab space without the approval of the Environmental Health and Safety Department.
  - Plumbed eyewash stations will NOT be used as a drain for any other type of equipment.
  - Bottle eyewashes shall be checked for an expiration date and replaced as needed per the lab staff.
- Fire Extinguishers:
  - Fire extinguishers have been strategically placed in or just outside laboratories depending on the hazards. ABC type extinguishers are located in laboratory facilities.
- First Aid Kits:
  - First aid kits should be available in each laboratory.
  - At a minimum, the kit should contain: Disposable gloves, Band-Aids, Gauze Bandage, Gauze Pads and Ice Packs.
  - First Aid kits are initially supplied by EHS and are then maintained and stocked by the laboratory instructor/principle investigator.
- Laboratory Safety Information:
  - SDS, emergency procedures, safety manuals, and other references should be readily available for all laboratory personnel.
- Sharps Containers and Glass Only Boxes:
  - Sharps containers are used for the disposal of hypodermic needles and syringes, razor blades and other sharp items.
  - When full, sharps containers should be sealed, labeled and disposed of by calling Facilities Management.
  - Glass-only boxes are used for the disposal of broken glass.
    - When full, the boxes should be properly sealed and disposed of by Facilities Management once the lab has put in a Facilities Work Order and replace the box with a new one immediately.
  - Sharps containers and glass-only boxes can be obtained (depending on the building) from departmental offices within the college.

**SECTION 17.3**

**LABORATORY PERSONAL PROTECTIVE EQUIPMENT**

**1. Introduction:**

- The following personal protective equipment must be available for laboratory personnel working with hazardous materials and provided by the departments. EHS will assist with recommendations on specific types and uses of protective equipment.

**2. Eye and Face Protection:**

- The eye is the most vulnerable of the body surfaces from an injury standpoint. Accidents that cause injury to the eyes rank among the highest laboratory risks.
- All persons at UNE, including students and visitors, must wear appropriate eye protection at all times when exposed to real or potential eye hazards' i.e. flying particles, boiling liquids, chemicals (solid, liquid, gas).
- The probability of injury to the eyes is increased when the eye is exposed to such laboratory procedures as those that generate liquid droplets, or splashes including pouring, stirring, blending, heating, reacting and compounding of chemicals.



- Equipment to protect the eyes and face must be in accordance with the Occupational Health and Safety Administration (OSHA) Personal Protective Equipment Standards for Eye and Face Protection, 29 CFR 1910.133 including but not limited to American National Standard for Occupational and Education Eye and Face Protection, Z87. 1-1989. Copies of the OSHA regulation and standard are available at EHS.

### 3. Laboratory Coats and Gloves:

- Laboratory coats, long pants, and closed toed shoes will be used when performing laboratory work.
- Depending on the type of work, additional personal protective equipment, such as gloves and aprons may be necessary.
- Coats, aprons, and gloves will be replaced periodically, removed before leaving the laboratory. Lab coats must be laundered regularly by a vendor service or dedicated machine on campus.
- Remove laboratory coats immediately on significant contamination and bag them in a labeled bag.
- When using chemicals, consult chemical compatibility information that is provided in manufacturer's catalogs or SDS to help you in selecting the proper gloves and other protective clothing.
- More information on specific types and uses of personal protective apparel is available from EHS and Section 19 of the Safety Manual.

**4. Respiratory Protection:** The use of air-purifying respirators for routine laboratory work is not recommended. (For more information on the Respiratory Protection Program, please see Section 7 of the Safety Manual.)

- Respirators are discouraged because they protect only the wearer and require periodic medical monitoring, specific training, and fit testing before they can be worn effectively.
- Properly operating laboratory fume hoods provide the best overall protection from chemical hazards in the laboratory.

## SECTION 17.4

## VENTILATION

### 1. Ventilation:

- General room ventilation does not provide adequate protection against hazardous gases, vapors, and aerosols.
- Doors must be closed in all laboratories when work is being performed to allow ventilation systems to work properly as designed.
- All work with corrosive, flammable, odoriferous, toxic, or other dangerous materials will be conducted only in a properly operating chemical fume hood.
- In special situations, vacuum systems and ductless fume hoods are acceptable if approved by EHS.
- When it is not possible to meet the above requirements EHS must evaluate hazards with faculty member to determine if work can be conducted safely.

### 2. Fume Hoods:

- Fume hoods are checked quarterly by the EHS and annually by an outside vendor
- The velocity of the air at the face of the hood is measured with the sash at the maximum height recommended for operation and use. The results are posted on a sticker, which is attached to the lower right-hand corner of the sash.
- On most hoods, stickers are placed 16 inches (or lower if necessary to meet the minimum acceptable face velocity) from the bottom of the fume hood.
- Hoods that do not meet the minimum exhaust requirements during the annual or quarterly inspections are posted out of service and Facilities Management is notified about the need for repairs.
- When repairs have been made, EHS will test the fume hood for proper operation.
- Procedures for Proper Use of Fume Hoods:

- Before using the hood, make sure air is entering the hood and hood is functioning properly. Report any problems.
- Do not block baffle openings or place bulky items in the hood that will prevent air from entering the baffle opening.
- Conduct work at least six inches from the edge of the hood.
- Lower the sash to marked use setting to protect you from dangerous reactions.
- Keep hood clean and uncluttered.
- Wipe up spills immediately.
- Be aware that drafts from open windows, open doors, fans, air conditioners, or high traffic walkways may interfere with normal hood exhaust.
- If hood malfunctions or ceases to operate, secure work area and materials, close the sash, and report condition to Facilities Management.
- Do not alter or remove flow alarms on hoods. Report any problems to the lab manager and contact Facilities to address the issue.

**3. Biological Safety Cabinets (BSC):**

- Class II (vertical laminar flow) biological safety cabinets (BSC) provide a partial containment system for the safe handling of pathogenic organisms.
- To ensure safety, BSCs must be used correctly with good microbiological techniques and be in proper mechanical working order. Cabinets should be certified for performance upon installation and any time that the cabinet is moved or altered.

**4. When to Use Safety Shields or Other Containment Devices:**

- Safety shields, such as the sliding sash of a fume hood, are appropriate when working with highly concentrated acids, bases, oxidizers or reducing agents, all of which have the potential for causing sudden spattering or even explosive release of material.
- Reactions carried out at non-ambient pressures (vacuum or high pressure) also require safety shields, as do reactions that are carried out for the first time or are significantly scaled up from normal operating conditions.
- Other containment devices, such as glove boxes or vented gas cabinets, may be required when it is necessary to provide an inert atmosphere for the chemical procedure taking place, when capture of any chemical emission is desirable, or when the standard laboratory fume hood does not provide adequate assurance that overexposure to a hazardous chemical will not occur.
- The presence of biological or radioactive materials may also mandate certain special containment devices.
- High strength barriers coupled with remote handling devices may be necessary for safe use of extremely shock sensitive or reactive chemicals.

### **1. Emergencies and Accidents:**

- To request emergency assistance on campus (fire, police, or ambulance), dial 911.
- In all emergencies and accidents, the first consideration is your safety and the safety of those around you.

### **2. Large Chemical Spills (5 gallons or more):**

- Alert all persons nearby.
- Evacuate the room. Upon leaving, close the door to the laboratory.
- Contact EHS as soon as possible, (on weekends, and after 4 p. m. contact Security, for advice and assistance).
  - Be prepared to provide the identity, amount, and location of the spill, as well as your location and a phone number where you can be reached - not your lab phone, since you should not remain in the lab after the spill.

### **3. Small Chemical Spills:**

- Small spills will be cleaned immediately, providing that the person cleaning the spill is familiar with the material and has the proper equipment. There is a small spill kit in each lab contained in a 5-gallon pail that can be utilized for small spills.
- Water spills can create a hazard because of the slip potential and flooding of instruments (particularly on the floor below.) Please use paper towels, mops or other such materials to clean up water spills. Chemical Spill Kits are for use with chemicals only.
- All spills need to be reported to EHS in a timely manner and spill kits will need to be re-stocked.

### **4. Fire: In case of fire, follow these procedures:**

- Close the door to the fire area.
- Activate the building fire alarm system.
- Dial 911 and report exact location of fire.
- Notify Security at 366 as soon as possible.
- Evacuate and stay clear of building.

### **5. Accidents and Injuries:**

- Serious injuries that require an ambulance must be reported to Emergency Medical Services by dialing 911.
- All other injuries should be assessed by a medical care provider at the Health Center for students and a physician at our off-site employee healthcare provider for employees. All incidents should be reported as soon as possible to the responsible faculty member, supervisor, Human Resources and EHS. The Students Affairs Office will also be notified if a student is involved.

### **6. Chemical Exposure Incidents:**

- In the event of a chemical exposure incident, medical personnel should be given the following information:
  - Identity of chemical(s)
  - Conditions under which exposures occurred, and signs and symptoms of exposure
  - An SDS must be provided.
  - In addition, a written accident investigation report should be forwarded by the head of the laboratory to Human Resources (if employee) or Department of Security (if non-employee).

### **7. Exposure Monitoring:**

- Regular environmental or employee exposure monitoring of airborne concentrations is not warranted or practical in laboratories because the chemicals are used for relatively short periods of time and in small quantities.
- All procedures are established to minimize possible exposures.
- Sampling may be appropriate when highly toxic substances are used regularly.
- Students who suspect that they have been overexposed to a toxic chemical should report to the Health

Center for medical treatment if it is necessary and subsequently notify EHS of the exposure. Laboratory employees/faculty/staff that may have been overexposed to a toxic chemical should report to the off-site employee healthcare provider designated by Human Resources and notify EHS of the exposure.

- An initial exposure assessment will be made and if there is reason to believe that the action level, or PEL if there is no action level, has been exceeded for any chemical for which a substance specific standard has been established, the University must measure the concentration of that chemical in the air.

## SECTION 17.6

## HANDLING AND DISPOSAL OF CHEMICALS

### 1. Procurement:

- Plan experiments with safety in mind. Substitute less hazardous chemicals in laboratory procedures when possible.
- Certain laboratory operations, procedures, or activities may warrant prior approval from a designated supervisor, CHO, or EHS. Check Section 18 (Hazardous Material/Chemical Inventory and Control) for special restrictions or contact EHS.
- Estimate the amount of chemical required for each experiment and order only what is necessary based on current inventories. *Excess chemicals are very expensive to dispose of and can cause a hazard if stored too long.*
- Request SDS from chemical vendor at the time of purchase:
  - Upon arrival, send one copy of the SDS to EHS.
  - Safety Data Sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, in all cases the required information is provided for each hazardous chemical,
    - SDS' must be readily accessible during each work shift to employees when they are in their work area(s) either by hard copy or electronic copy.
    - Electronic access and other alternatives to maintaining paper copies of the material safety data sheets are permitted as long as no barriers to immediate employee access in each workplace are created by such options.
    - In addition, an SDS file is maintained by EHS.
  - Before opening a package containing hazardous substances, inspect the packaging carefully for any signs of breakage or leakage of material. If there are any signs of leakage, place package in chemical fume hood, protect yourself from exposure, and call EHS for assistance.
  - Each department is responsible for determining what additional procedures and storage requirements are required and if available.

### 2. Storage:

- The quantity of chemicals that need to be stored should be reduced to an absolute minimum.
- Chemicals should be stored based on their compatibility and not in alphabetical order (See chemical compatibility chart in Appendix S). The following are general guidelines:
  - Storage areas should be well ventilated (consult with EHS).
  - Large containers of reagents should be stored on low shelving, preferably in trays to contain all leaks and spills.
  - Inventories of storage areas should be conducted at least annually. Please see Section 18 for inventory

procedures.

- Chemicals with strong odors should be stored inside cabinets or underneath fume hoods.
  - Reactive chemicals should be stored in air-tight containers or at very low temperatures.
  - Flammables requiring refrigeration should be stored in explosion-safe refrigerators.

### **3. Labeling:**

- All containers including beakers, vials and flasks must be dated and labeled with the chemical constituents, hazard, and the user's name on the label.
  - Labels on incoming containers must not be removed or defaced.
  - Dating is especially important in the case of compounds which have a specified shelf life, such as those that will form peroxides (e. g. ethyl ether).
- Identifying unknowns for disposal is extremely costly so all original and secondary containers MUST be labeled.
- All laboratory personnel who are leaving the University are responsible for identifying and properly disposing of the chemical waste in their laboratory.

### **4. Transportation of Chemicals:**

- Chemicals will not be shipped or transported in a vehicle without prior approval from EHS. Transportation off campus of chemicals is prohibited without the proper knowledge provided by the EHS staff.
- When transporting chemicals on campus:
  - A secondary containment is a durable container with a properly fitted cover must be used.
  - Secondary containers should be used when chemicals are carried through corridors, stairways and inside elevators. Both primary and secondary containers should be labeled with the type of material contained inside.
  - Use a utility cart with a lip on the edge to transport chemicals within a building.
- If the container is dropped or compromised in any way and there is a leak or spill, contact Security and EHS immediately.

### **5. Chemical Waste:**

- Most of the waste chemicals resulting from laboratory experiments are considered hazardous and the generation, storage, and disposal of hazardous wastes must be given consideration in every experiment.
- Each laboratory must follow the procedures specified in Section 12 of the Safety Manual.

### **6. Working with Allergens and Embryotoxins:**

- Allergens (examples: diazomethane, isocyanates, bichromates):
  - Wear suitable gloves to prevent hand contact with allergens or substances of unknown allergenic activity.
- Embryotoxins (examples: organomercurials, lead compounds, formamide):
  - If you are a woman of childbearing age, handle these substances only in a hood whose satisfactory performance has been confirmed, using appropriate protective apparel (especially gloves) to prevent skin contact.
- Review each use of these materials and review continuing uses annually or whenever a procedural change is made.

### **7. Working with Chemicals of Moderate Chronic or High Acute Toxicity:**

- Examples: diisopropylfluorophosphate, hydrofluoric acid, hydrogen cyanide. These precautions are appropriate for substances with moderate chronic or high acute toxicity used in significant quantities:
  - Minimize exposure to these toxic substances by any route using all reasonable precautions.
- Location: Use and store these substances only in areas of restricted access with special warning signs.
- Always use a hood (previously evaluated) to confirm adequate performance with a face velocity of at least 80 linear feet per minute or other containment device for procedures which may result in the generation

of aerosols or vapors containing the substance; trap released vapors to prevent their discharge with the hood exhaust.

- **Personal Protection:** Always avoid skin contact by use of gloves and long sleeves (and other protective apparel as appropriate). Always wash hands and arms immediately after working with these materials.
- **Records:** Maintain records of the amounts of these materials on hand, amounts used, and the names of the workers involved.
- Assure that at least 2 people are present at all times if a compound in use is highly toxic or of unknown toxicity.
- Store breakable containers of these substances in chemically resistant trays; also work and mount apparatus above such trays or cover work and storage surfaces with removable, absorbent, plastic backed paper.
- Store contaminated waste in closed, suitably labeled, impervious containers (for liquids, in glass or plastic bottles half-filled with vermiculite).

#### **8. Work with Chemicals of High Chronic Toxicity:**

- Examples: dimethyl mercury and nickel carbonyl, benzo-a-pyrene, N-nitrosodiethylamine, other human carcinogens or substances with high carcinogenic potency in animals.
- Further supplemental rules to be followed, in addition to all these mentioned above, for work with substances of known high chronic toxicity:
- Conduct all transfers and work with these substances in a "controlled area": a restricted access hood, glove box, or portion of a lab, designated for use of highly toxic substances, for which all people with access are aware of the substances being used and necessary precautions.
- Prepare a plan for use and disposal of these materials and obtain the approval of the CHO.
- Protect vacuum pumps against contamination by using scrubbers or HEPA filters and vent them into the hood. Decontaminate vacuum pumps or other contaminated equipment, including glassware, in the hood before removing them from the controlled area.
- Decontaminate the controlled area before normal work is resumed there.
- On leaving a controlled area, remove any protective apparel by placing it in an appropriate, labeled container and thoroughly wash hands, forearms, face, and neck.
- Use a wet mop or a vacuum cleaner equipped with a HEPA filter instead of dry sweeping if the toxic substance was a dry powder.
- Medical surveillance:
  - If using toxicologically significant quantities of such a substance on a regular basis (e. g., 3 times per week), consult a qualified physician concerning desirability of regular medical surveillance.
  - Keep accurate records of the amounts of these substances stored and used, the dates of use, and names of users.
- Assure that the controlled area is conspicuously marked with warning and restricted access signs and that all containers of these substances are appropriately labeled with identity and warning labels.
- Store these chemicals in a ventilated, limited access area in labeled, unbreakable, chemically resistant, primary and secondary containers.

## **SECTION 17.7**

## **BIOLOGICAL SAFETY**

### **1. Handling of Human Blood and Body Fluids:**

- Laboratory practices must be followed on the assumption that all human blood, body fluid, and tissues are infectious (universal precautions).
- The Centers for Disease Control and National Institutes for Health recommend that biosafety level 2 (BSL

2) standards, containment, and facilities be used for activities involving clinical specimens, body fluids and tissues from humans or from laboratory animals infected or inoculated with human material. (Please see the Institutional Biosafety Committee Manual for more information on Biological Safety Issues.)

- These standards should also be applied to work with human cells in culture, or human serum-derived reagents which may be used as controls.

**2. Transport of Biological Materials:**

- Transportation of Biological materials off campus is strictly prohibited without the assistance of the EHS department. Contact EHS if biological materials need to be transported or shipped off campus.
- Secondary containers such as sealable plastic containers are required when biological materials are carried to another laboratory or building.
- Both primary and secondary containers should be labeled with the type of material contained inside.
- If the container is compromised in any way and there is a leak or spill, contact Security and EHS.

**3. Biohazard Signs and Labels:**

- A biological hazard sign with the international biological warning symbol should be affixed to the doors of all biosafety level 2 or 3 laboratories. (UNE is not presently configured to handle a biosafety level 3 laboratory.)
- In addition, equipment used to store biohazard materials (e. g., incubators, refrigerators, freezers) and receptacles for storage of biohazard waste should be labeled (available from EHS).

**4. Storage, Treatment, and Disposal of Biohazard Waste:**

- Biohazard wastes generated during experiments should be placed in covered and labeled containers or in a bag within a secondary container.
- Care should be taken to place all needles and syringes and other sharps in puncture-proof containers.
- All biohazard waste must be disposed of through a licensed facility (see Section 10 of the Safety Manual).
- If hazardous chemicals or radioactive materials are also present, please consult EHS before treatment and disposal.

**5. Disposal of Animals:**

- All dead animals (or animal tissues) that have been used for teaching and/or research purposes are to be considered biohazard waste.
- If the animals or animal tissues have been placed in a formaldehyde solution, they must be separated from the solution before incineration.
- Radiation Safety: Please see Section 15 of the Safety Manual.

**SECTION 17.8**

**CHEMICAL HYGIENE PLANS**

**1. Chemical Hygiene Plans:**

- UNE is required by 29 CFR 1910 section 1450 of subpart Z (Occupational Exposures to Hazardous Chemicals in Laboratories) to develop a chemical hygiene plan for each laboratory that use hazardous chemicals.
- The development of a detailed written chemical hygiene plan is necessary to establish continuity, to train personnel, and to help ensure that all employees recognize and comply with work place safety. It is extremely difficult to effectively communicate and enforce requirements without a detailed written chemical hygiene plan.
- The UNE Laboratory Safety Section (Section 17) is intended to serve primarily as a general safety document for compliance with various state and federal environmental and occupational health and safety rules and regulations. It is neither feasible nor technically valid to attempt to provide specific procedures or protocols in a general safety document. However, individual laboratories should be able to develop their

own specific chemical hygiene plans by incorporating individual lab functions with the UNE Laboratory Safety Manual.

- The Content of the Chemical Hygiene Plan: The chemical hygiene plan will include each of the following elements and will indicate the specific measures to be taken to ensure that University employees are protected:
  - Standard operating procedures relevant to all laboratory operations, to be followed by laboratory employees.
  - Statements of the criteria that will be used to determine and implement control measures to reduce employee exposure to hazardous chemicals. These measures include engineering controls, use of personal protective equipment, and personal hygiene practices.
  - Criteria to reduce exposure to extremely hazardous chemicals used in the laboratory will be specifically included.
  - A requirement that fume hoods and other protective equipment will function properly and descriptions of the methods to be taken to ensure that such equipment is functioning properly.
  - Circumstances under which a laboratory practice requires prior approval from a supervisor before implementation.
  - Provisions for additional protection for employees when working with particularly hazardous substances, including:
    - Select carcinogens.
    - Reproductive toxins.
    - Substances with a high degree of acute toxicity.
  - Use of containment devices such as fume hoods or glove boxes.
  - Procedures for safe removal and disposal of contaminated and hazardous waste.
  - Decontamination procedures.

**SECTION 17.9**

**CELL PHONES IN LABORATORIES**

**1. Cell phone use in laboratories:**

- Cell phones may be used in laboratories for educational or emergency purposes only; however certain guidelines must be followed to ensure that the cell phone is not contaminated by chemical or biological agents:
  - Option 1: If you are wearing gloves in a lab to prevent contamination, remove your gloves before picking up the cell phone, use the phone for whatever task is needed and don a new pair of gloves. This process must be used each time the cell phone is used.
  - Option 2: If you are going to be using the cell phone while wearing contaminated gloves, the phone must be decontaminated and wiped down with an appropriate cleaning agent while wearing clean, non-contaminated gloves before leaving the laboratory.
- Cell phones should not be used for personal reasons in the lab and should be stored with your personal items if they are not being used for educational or emergency purposes to prevent contamination.

**SECTION 17.10**

**CHILDREN/PETS IN LABORATORIES**

**1. Children in laboratories:**

- The University of New England is committed to introducing minors to interesting and challenging scientific, scholarly, pursuits and fields at a young age. These experiences should be handled in ways that will promote the safety of the minors and that will not impair the normal functions of the University. This



policy establishes restrictions relating to and conditions under which certain minors are permitted to be in UNE laboratories and other UNE facilities that could pose risks to minors.

- This policy applies to all minors who will visit, tour, observe, or conduct research or a scholarly activity in a UNE laboratory as part of an organized tour program or as an individual observer or volunteer. It does not apply to emancipated minors, minors who are matriculated UNE students or minors who are employed by UNE. It also does not apply to summer camps or events coordinated through UNE's Conference Services Department or Campus Center programs. *This policy is instituted for laboratory facilities only. A "minor" is considered to be any persons under the age of 18.*

## **2. Children of Faculty/Staff and Visiting Children:**

- For the safety of children visiting the UNE campuses with a faculty or staff member, we cannot allow them to enter any of the lab spaces on campus. This is to reduce the likelihood of a chemical or a biological exposure to any child that visits UNE and to preserve the integrity and accuracy of all research studies.
  - Any minor under the age of 18 years that is a child, relative, or visitor brought in by a UNE faculty or staff member is not permitted in any laboratory space. All children must be limited to office areas and common areas on campus and must be escorted by a faculty/staff member at all times in these areas.
  - Any minor under the age of 18 years that is a child, relative, or visitor brought in by a UNE faculty or staff member must be supervised at all time by that faculty or staff member with no exceptions.
  - If a child brought on campus by a UNE faculty or staff member is found in the laboratory space, they will be asked to relocate to an office area or common area.
- Please reference **APPENDIX C CHILDREN ON CAMPUS GUIDELINES** in the UNE Personnel Handbook provided by Human Resources. Guidelines regarding visiting children of faculty/staff are outlined in this section very clearly.

## **3. Pets in Laboratory Spaces:**

- No pets are permitted in any building that contains a laboratory space. There are no exceptions to this policy. If the use of a service dog is required, please notify the Department VP or Dean before the animal is used in the facility as a common courtesy to the occupants of the building.

## **4. Minors Visiting UNE Laboratories for Educational Purposes**

- Definitions:
  - Covered Activities refers to the activities that Covered Minors may perform in certain laboratories. These may include, but are not limited to, Covered Minors observing ongoing research, scholarly or artistic activities, Covered Minors actively participating in research, scholarly or artistic activities, or Covered Minors actively participating in training exercises to learn skills associated with research, scholarly or artistic activities.
  - Covered Minor(s) refers to person(s) at least 6 years old, but younger than 18 years of age who are not emancipated, matriculated as UNE students or employed by UNE and are on campus for educational purposes.
  - Laboratory refers to all facilities classified by the University of New England as laboratory spaces, which include the following:
    - Research and teaching laboratories such as chemistry, biology, biomedical sciences, and marine sciences.

- Animal and plant facilities such as animal holding rooms, surgical suites, greenhouses, etc.
- Environmental laboratories such as ecology outdoor nature laboratory, marine science field work, etc.
- Other facilities posing similar risks that are routinely surveyed by EHS such as ceramics and art studios.
- Lab Tour refers to when one or more Covered Minor(s) visit a particular laboratory at particular times on one day to observe pre-selected and pre-arranged research, scholarly activities.
- Lab Class refers to when one or more Covered Minor(s) attend a pre-scheduled class or laboratory program on campus through an organizational program or school system.
- Lab Supervisor refers to the UNE staff member or faculty member, including but not limited to a Principal Investigator, who has the ultimate control and responsibility for all activities and matters associated with a particular laboratory. This staff member or faculty member has the responsibility for ensuring that Covered Minors have satisfied all the conditions and requirements in this policy. The Lab Supervisor is responsible for guaranteeing that all appropriate UNE paperwork, requirements, and conditions have been completed *before* a minor is allowed into a Laboratory (consulting with the appropriate university offices, collecting mandatory forms from Covered Minors, etc.).
- Monitor refers to the UNE staff member, faculty member or graduate student with the primary responsibility for supervising Covered Minors who are assigned to the Monitor while they are in the Monitor's designated Laboratory. In certain cases, the Monitor and the Lab Supervisor may be the same individual.
- Restrictions
  - Prohibited Minors: Persons under the age of six (6) are not permitted in any Laboratory.
  - Prohibited Laboratories: Covered Minors are not permitted under any circumstances in the following laboratories:
    - Laboratories where radiation or radioactive materials are stored or used,
    - Laboratories with Class IIIB or IV Lasers,
    - Laboratories classified at a level of containment of Biosafety Level 2 (BSL-2) or above,
    - Animal Care Facilities classified at a level of containment of Animal Biosafety Level 2 or above.
    - Any facility or location where the use of a respirator is required during normal operations.
  - Prohibition on Covered Activities: Covered Minors are prohibited from participating in Covered Activities in laboratories where pyrophoric or highly toxic gases are stored or used; however, they can participate in Lab Tours/Classes of such laboratories, providing that activities involving use of such materials are suspended.
- Conditions related to Lab Tours/Classes
  - Monitors: Each Covered Minor who takes a Lab Tour/Class must have an identified and responsible Monitor.
  - Mandatory Prior Coordination relating to Lab Tours/Classes prior to a Lab Tour/Class, the Monitor must take the following actions:
    - Consult with the appropriate Lab Supervisor
      - to establish a date for the tour/class that will not impair on-going research,

- to select and to arrange for the research, scholarly activities that will occur during the tour/class
- to receive from the Lab Supervisor any Lab-specific guidelines or protocols that will apply to the Covered Minors during their tour or class, and have all forms filled out in advance.
- If the Covered Minor will be exposed to any chemical or biological agents during their visit to the lab, the parents of the minor must be notified and sign a permission slip in advance.
- Consult with the Lab Supervisor to establish the maximum number of Covered Minors who can be visiting that Laboratory at one time.
- If the Lab Supervisor is a faculty or staff member assigned to a College, notify his/her Department Chair and Dean of a scheduled Lab Tour/Class and submit a list of Covered Minors planning to participate in the Lab Tour/Class at least two days before the tour/class;
- If the Lab Supervisor is a staff member who reports to a supervisor outside Academic Affairs, he/she must notify their supervisor and Vice President of a scheduled Lab Tour/Class and submit a list of Covered Minors planning to participate in the Lab Tour/Class at least two days before the tour/class.
- Collect a properly signed UNE Recreational Activities Waiver from each such Covered Minor.
- Controls Applicable to the Lab Tour/Class
  - The Monitor will confirm the names of all Covered Minors actually participating in the tour/class.
  - While Covered Minors are in the Laboratory, their assigned Monitor will supervise the Covered Minors and will ensure that they are always in compliance with all applicable requirements or conditions included in this policy, in the tour or course materials (if any), in any EHS or other safety training materials or directives, and in any Lab-specific guidelines or protocols.
  - The Monitor, coordinating with the Lab Supervisor or his/her designee, will ensure that for the full duration of the Lab Tour/Class all hazardous materials, such as chemicals and biological agents, will remain secured, and all activities that could pose a hazard to the Covered Minors are suspended.
  - The Monitor will ensure that the maximum number of Covered Minors allowed to tour/class the selected lab at one time is not exceeded.
  - The Monitor will immediately notify UNE Security, the Lab Supervisor and EHS if any of their assigned Covered Minors are injured during a Lab Tour/Class.
- Additional Controls relating to Lab Tours and Classes for Minors
  - Lab Tours/Classes in animal care facilities in addition to satisfying all the conditions in this section, animal care facility must also meet the following conditions:
    - The Monitor, coordinating with the Lab Supervisor or his/her designee, will ensure that for the duration of the Lab Tour/Class invasive animal procedures and euthanasia will be suspended; and
    - The Monitor will ensure that, immediately before the tour/class, each Covered Minor receives training or instructional materials from animal facility staff as directed by the Lab Supervisor or his/her designee.
- Retention of Records associated with Lab Tours and Classes for Minors
  - The Monitor will ensure that a UNE Recreational Activities Waiver for each Covered Minor on the Lab Tour/Class and appropriate documentation about the Lab Tour or Class are retained by the Department responsible for the laboratory.
- Conditions relating to Covered Activities

- Mentor: Each Covered Minor who willingly engages in Covered Activities must have an identified and responsible Mentor.
- Mandatory Prior Coordination related to Covered activities: Before any Minor may participate in a Covered Activity, the Mentor must take the following actions:
  - Consult with the appropriate Lab Supervisor to establish dates when a Covered Minor can participate in Covered Activities, to select and to list the research or scholarly activities in which the Covered Minor will participate (itemize the Covered Activities), to select and to appoint a Monitor for each Covered Minor; and provide documentation to the Lab Supervisor, to receive from the Lab Supervisor any laboratory-specific guidelines or protocols that will apply to the Covered Minor while participating in Covered Activities;
  - Consult with EHS to identify and to schedule any mandatory safety training for the Covered Minor and to establish the maximum number of Covered Minors who can participate in Covered Activities in the Laboratory at any one time;
  - Obtain written approval of the Covered Minor's participation in the Covered Activities from the Lab Supervisor and if the Lab Supervisor is faculty or staff appointed within the College, from his/her Department Chair and Dean if the Lab Supervisor is a staff member assigned outside Academic Affairs, from his/her supervisor and Vice President.
  - Collect a properly signed UNE Recreational Activities Waiver from each Covered Minor; and retain them in the Department for which they are employed for the University's records.
- Controls applicable to Covered Activities
  - Before any Minor may enter the Laboratory to begin participating in a Covered Activity, the Monitor must take the following actions:
    - Ensure that all the necessary forms, including the UNE Recreational Activities Waiver are on file for the Covered Minor
    - Ensure that the Covered Minor *has received and understands all safety training* required by EHS and all Lab-specific guidelines and protocols, including but not limited to, the use of personal protective equipment.
  - Anytime the Covered Minor is participating in Covered Activities or is otherwise in the Laboratory, the Monitor, coordinating whenever necessary with the Lab Supervisor or his/her designee and EHS, will ensure that:
    - The Covered Minor is supervised by the Monitor at all times;
    - The Covered Minor participates only in the itemized Covered Activities;
    - The Covered Minor follows all applicable requirements or conditions included in this policy, in the program materials (if any), in any EHS or other safety training materials or directives, and in any Lab-specific guidelines and protocols, including but not limited to, the use of personal protective equipment.
    - The maximum number of Covered Minors allowed to participate in Covered Minors allowed to participate in Covered Activities in that Laboratory at any one time is not exceeded; and
    - The Monitor and Lab Supervisor are immediately notified of misconduct by Covered Minors and of any damages, safety concerns, injuries, or similar incidents relating to a Covered Minor's participation in Covered Activities or presence in the Laboratory.

- Retention of Records associated with Covered Activities:
  - The Monitor or Lab Supervisor will ensure that a signed UNE Recreational Activities Waiver for each Covered Minor participating in Covered Activities and other appropriate documentation relating to the Covered Minor and to the Covered Activities are retained by the Department Chair under whom the Laboratory is housed.
- Exceptions to the Policy
  - When an exception may be authorized: An exception to provision(s) found in this policy may be initiated by a Lab Supervisor and granted as provided below if the following determination is made:
    - The benefits or outreach opportunities associated with a Lab Tour or Covered Activities outweigh any potential risks or disadvantages that may result from deviations to such provision(s).
    - Who must approve an exception: If the Lab Supervisor makes the determination stated then he/she should document the deviations to this policy and the rationale supporting the determination, and then forward the request to their Dean AND the EHS department.
- Suspensions of Covered Minor's Privileges
  - The Dean, Department VP, Lab Supervisor or EHS may temporarily suspend a Lab Tour or Covered Activities, or a Covered Minor's participation in a Lab Tour/Class or in all or part of the listed Covered Activities if violations, safety deficiencies or other conditions occur.
  - The Dean, Department VP, Lab Supervisor or EHS may permanently suspend future Lab Tours/Classes, Covered Activities or a Covered Minor's participation in a Lab tour/class or all or part of the list Covered Activities if violations, safety deficiencies or other conditions occur and are not corrected.
  - At any time, the Department VP or EHS may intervene and make the final decisions relating to any suspensions of privileges governed by this policy, and on the management of any disciplinary actions relating to violations of this policy or to misconduct associated with Covered Minors.
- Role of the UNE UWSC Laboratory Safety Committee
  - UNE's University Wide Safety Committee will review records documenting the number and frequency of minors in labs, and, based on its review, may provide its recommendations related to the policy to the EHS Department.
- Administrative Oversight
  - The individual Departments maintain administrative oversight and ultimate authority to enforce requirements relating to Lab Tours, Lab Classes, Covered Activities and organized programs associated with such tours and activities. All violations, safety deficiencies or other conditions should also be reported to the Department VP.

**SECTION 17.11**

**WORKING WITH ULTRAVIOLET LIGHT, TRANS-ILLUMINATORS AND CROSS-LINKERS**

**1. What Are UV Trans-illuminators?**

- Ultraviolet (UV) trans-illuminators or UV light boxes are used in biotechnology for visualization of nucleic acids (DNA or RNA) after gel electrophoresis and ethidium bromide staining. Samples are placed on the illumination window and illuminated by UV light. The clear glass face allows the light to illuminate the gel, but also potentially exposes the user. To reduce the risk of injury, most models come equipped with a shield to filter excess light. For older models, various types of shields can be attached that provide equal protection.

- UV trans-illuminators operate at one of several wavelength bands, depending on the type of sample. Standard wavelength bands are 254, 312, and 365 nanometers (nm). Most of these instruments are stationary, but a few hand-held types carry the same hazards as those of the stationary models.
- Equipment must be used for the purpose for which it was designed. For example, portable UV readers must not be used UV side up as mini-trans-illuminators for cutting gels.

## **2. What Are UV Cross-linkers?**

- This apparatus is used to literally “cross-link” to covalently attach nucleic acid to a surface or membrane following Southern blotting, Northern blotting, dot blotting, and colony/plaque lifts. Since the DNA will be used in place, a 254 nm wavelength is used to maximize adherence.

## **3. Hazard and Risks from Trans-illuminator UV Radiation**

- It is important to note that the UV radiation used in trans-illuminators is harmful to both skin and eyes. UV radiation cannot be seen and is not felt immediately; the user may not realize the danger until after the exposure has caused damage. Symptoms typically occur 4 to 24 hours after exposure.
- Most UV sources can emit a small amount of blue light, but this does not indicate anything about the amount of emitted UV. Unfortunately, the low intensity of visible light gives a false illusion that the intensity of UV radiation is low.
- The effects on skin are of two types, acute and chronic. Acute effects appear within a few hours of exposure, while chronic effects are long-lasting and cumulative, and may not appear for years. An acute effect of UV radiation is redness of the skin called erythema (similar to sunburn). Chronic effects include accelerated skin aging and skin cancer.
- UV radiation is absorbed in the outer layers of the eye – the cornea and conjunctiva. Acute overexposure leads to a painful temporary inflammation, mainly of the cornea, known as photo keratitis. Repeat overexposure to the UV is unlikely because of the pain involved. However, chronic exposure leads to an increased risk of certain types of ocular cataracts.
- Working unprotected for even a few minutes can cause injury. It is possible to calculate acute threshold for acute effects and to set exposure limits. It is not possible, however, to calculate threshold for chronic effects; therefore, there is no exposure level is safe, exposure should be reduced as much as possible.

## **4. Hazard Substitution:**

- It is always preferable to remove a hazard than to implement protective measures. Dyes are available that fluoresce in blue light, eliminating the ethidium bromide and, thus, the need to use UV. These dyes have the advantage that although filter glasses are generally worn to remove background light and enhance contrast, the UV hazard is no greater than that from any other bright visible light source. This alternative also eliminates the use of ethidium bromide, which is mutagenic, irritant, and toxic by inhalation.

## **5. Limiting UV Exposure:**

- Consult the manufacturer’s manuals for information about the potential exposure level and frequency of radiation, as well as for the suggested operating protocols. There are three types of control measures: engineering, administrative, and personal protective equipment.

## **6. Engineering Controls:**

- Location of UV-generating devices should be located in a separate room, alcove, or low-traffic area of a lab. To prevent exposure to other employees, avoid placing equipment in the vicinity of desk areas or other equipment.

## **7. Enclosure:**

- The use of light-tight cabinets and enclosures is the preferred means of preventing exposure. Where it is not practicable to fully enclose the UV source, use screens, shields, and barriers.
- UV trans-illuminators are often fitted with a plastic safety cover that provides partial shielding by filtering out some or all of the UV radiation. Trans-illuminators are often designed with a cover that is hinged at the

front of the unit to partially shield the user at the same time as allowing the user to manipulate the sample. Covers or partial enclosures must not be removed when the equipment is in use. They should be replaced if discolored, degraded, or damaged in any way.

#### **8. Interlocks:**

- UV trans-illuminators should come with interlock devices. Interlocks must not be tampered with. They must be replaced or repaired when defective. Old trans-illuminators that are not interlocked should be disposed of and replaced with alternatives.

#### **9. Administrative Controls:**

- Typical administrative controls include limiting access, ensuring that people are aware of the potential hazards, and providing training and safe working instructions for users.

#### **10. Training:**

- Personnel should be trained in using the UV equipment safely. The manufacturer's manuals provide specific safety-related information (e.g., type of eye/skin protection needed, ventilation requirements) that must be completely understood before using the equipment. If any uncertainty or concern exists regarding the safe use of UV-generating equipment, contact the manufacturer for clarification.
- Personnel should carefully study the manufacturer's manuals for the UV-generating equipment and be familiar with its use. It is important never to deviate from the instructions for safe operation without first contacting the manufacturer.
- At a minimum, lab personnel should be familiar with the following when working with or around UV light:
  - UV light-producing equipment
  - Warning signs and labels
  - Protective equipment
  - Symptoms of UV exposure

#### **11. Minimizing exposure:**

- Never view the UV lamp directly. Although the inverse square law applies to non-laser beam UVR, it is not advisable to look directly at any UV source) – at any distance.
- Keep exposure time to a minimum, and where the source is not enclosed or shielded, the keep as far away from it as practicable.
- Restrict access to those personnel who are directly concerned with the operation of the UV source.

#### **12. Hazard warning signs:**

- Warning signs are necessary to inform about the risk of exposure during use and maintenance. Warning signs should be used where applicable to indicate the presence of potential UVR hazards, to restrict access, and to specify PPE.

#### **13. Personal Protective Equipment:**

- UV trans-illuminators are used not only for viewing gels but also during the process of cutting samples. PPE may be the only practical way of limiting exposure while the user is working with the plate. Appropriate PPE includes eyewear, face shields, gloves, and lab coats.
  - Eyewear: Use eyewear that is appropriate for the work. Special safety glasses are available for the different UV ranges. For best UV protection, the eyewear should be compliant with ANSI Z87.1 and should have a UV filter marking, *U*, followed by a number on a scale from 2 to 6.
  - Face shield: UV-absorbing, full face shields should be worn in addition to safety glasses or goggles (goggles may not provide sufficient face protection). Severe skin burns can happen in a very short time, especially under the chin (which is often left exposed). **Full face shields are the only appropriate protection when working with UV light boxes for more than a few seconds.**
  - Gloves: At a minimum, wear nitrile, latex, or tightly woven fabric gloves to protect against the significant amounts of UV-A and UV-B that may pass through to the skin; these types of gloves have a

low transmission of UV compared to vinyl gloves. Gloves should protect personnel from UV light, as well as from the hazard of the activity being performed.

- Lab coat: Wear a lab coat that fastens securely at the wrists and up the neck so that no skin is exposed. Note that burns to uncovered wrists and the neck are not uncommon.

**NOTE: Tyvek® protective wear, such as arm shields, coveralls, and lab coats, is NOT appropriate PPE because it may allow significant leakage of UV through it.**

- PPE must be either readily available and cleaned between users or personally allocated to each user. Eye and face protection must be regularly inspected either regularly or before each use for damage or defects such as cracks, crazing, or bleaching, and replaced when necessary. Note that PPE may need to serve multiple purposes, such as protecting against both chemical splashes and UV.

#### 14. Important Safety Tips

- NEVER use a trans-illuminator without its protective shield in place.
- NEVER tamper with or bypass the interlocks.
- NEVER use a UV cross-linker that does not have a door safety interlock.
- NEVER use a bio-imaging system with a trans-illuminator within a drawer, with the drawer in the open position.
- ALWAYS use appropriate PPE for the hazard: UV face shield, goggles, gloves, buttoned-up lab coat.
- ALWAYS keep shields clean, and replace if damaged.

### SECTION 17.12

### LABORATORY SAFETY TRAINING AND RECORDKEEPING

#### 1. Training

- Department Heads are responsible for insuring that their employees and students receive proper training. Laboratory Safety, Hazard Communication and PPE training is required before initial assignment to a laboratory.
- When biohazard or radioactive materials are being used, additional training is required (see Section 13).
- Contact EHS for Laboratory Safety, Fire Safety, PPE, Hazard Communication, Biological Safety, and Radiation Safety Training.

#### 2. Record Keeping:

- Medical Records: Confidential medical records will be maintained on employees and students receiving medical surveillance and medical care at the Health Center or Human Resources.
- Safety Data Sheets (SDS): SDS' must be readily accessible during each work shift to employees when they are in their work area(s)
  - Electronic access and other alternatives to maintaining paper copies of the safety data sheets are permitted as long as no barriers to immediate employee access in each workplace are created by such options.
  - SDS' will be maintained by the chemical user of the chemical.
  - SDS' for substances no longer utilized at UNE will be maintained for a period of 30 years by EHS.
- Training Records:
  - Records for training conducted by EHS will be maintained in the Department of Human Resources for a minimum of three years; unless otherwise specified.
  - Copies of attendance logs will be supplied to HR who will maintain electronic records.



<b>SECTION 18</b>	<b>HAZARDOUS MATERIAL/CHEMICAL INVENTORY AND CONTROL</b>
<p><b>1. Introduction:</b></p> <ul style="list-style-type: none"> <li>This section provides University Faculty, Staff, and Students with guidelines on ordering chemicals, adding and removing chemicals from the inventory system, and proper storage and handling of hazardous materials and chemicals. It is essential for all hazardous materials and chemicals to be strictly controlled to ensure a safe working environment, prevent exposures, and reduce waste generation.</li> </ul>	
<b>SECTION 18.1</b>	<b>RESPONSIBILITIES</b>
<p><b>1. Environmental Health and Safety Department (EHS):</b></p> <ul style="list-style-type: none"> <li>Keeps an accurate database of all chemicals on campus with a web based chemical inventory module called the Vertere Chemical Inventory Management System.</li> <li>Works with the UNE Shipping and CHO's and Department Heads to ensure that all chemicals receive a barcode upon arrival and that current Safety Data Sheet(s) are onsite, available, and kept on file.</li> <li>Controls hazardous substances on campus and applies for special licenses or government notifications as required.</li> <li>Quarterly completes a chemical reconciliation on all labs' chemicals.</li> </ul>	
<p><b>2. Chemical Hygiene Officers/Biosafety Officers/Department Heads:</b></p> <ul style="list-style-type: none"> <li>Collaborates with EHS on the ordering of chemicals and quantities that their department requires.</li> <li>Ensures all chemicals/biological agents are stored properly and are accounted for at all times.</li> <li>Controls who has access to chemicals/biological agents and who is authorized to use them.</li> <li>Provides a current copy of SDS' to the EHS department for every chemical ordered and keeps a current copy on file where the chemical is used.</li> <li>Assists EHS with the chemical inventory process as needed.</li> </ul> <p><b>3. Mailroom/Shipping and Receiving Department</b></p> <ul style="list-style-type: none"> <li>Receives all packages including all chemical/hazardous material deliveries at UNE, inspects the packages to ensure there are no leaks or spills, and refuses damaged packages when necessary.</li> <li>Notifies EHS if there are any chemicals that have leaked or spilled through their packaging.</li> <li>Delivers the chemicals/hazardous materials to the appropriate departments on campus.</li> </ul>	
<b>SECTION 18.2</b>	<b>POLICIES AND PROCEDURES</b>
<p><b>1. Classification of Hazardous Materials/ Chemicals:</b></p> <ul style="list-style-type: none"> <li>In order to safely and properly handle and store hazardous materials/ chemicals, it is important to know the hazards of those materials. Hazardous materials/chemicals may generally be assigned to one or more of the following classifications: <ul style="list-style-type: none"> <li><u>Flammable liquid</u>: A liquid having a flash point of not more than 93 °C.</li> <li><u>Flammable solid</u>: A solid which is readily combustible, or may cause or contribute to fire through friction.</li> <li><u>Oxidizer</u>: A material which may cause the ignition of combustible materials without the aid of an external source of ignition or which, when mixed with combustible materials, increases the rate of burning of these materials when the mixtures are ignited.</li> <li><u>Corrosive</u>: A chemical that has a pH less than 2 or greater than 12.5 and causes visible destruction or,</li> </ul> </li> </ul>	

<b>Table 1: GHS Flammable (and Combustible) Liquid Criteria</b>		
Criteria	GHS Category	Transport Class/Packing Group
Flash point < 73°F(23°C) and initial boiling point < 95°F(35°C)	1	3, I
Flash point < 73°F(23°C) and initial boiling point > 95°F(35°C)	2	3, II
Flash point ≥ 73°F(23°C) and < 140°F(60.5°C)	3	3, III
Flash point > 140°F(60.5°C) and < 199.4°F(93°C)	4	Combustible Liquid, PG III [DOT uses <200°F(93°C)]

or irreversible alterations in, living tissue by chemical action at the site of contact.

- **Organic Peroxide:** A liquid or solid organic substance which contains the bivalent -O-O structure and may be considered a derivative of hydrogen peroxide, where one or both of the hydrogen atoms have been replaced by organic radicals. The term also includes organic peroxide formulation (mixtures).
- **Poison, Class A:** A DOT term for extremely dangerous poison, poisonous gases or liquids that, in very small amounts, either as gas or as vapor of the liquid, mixed with air, are dangerous to life. Examples: phosgene, cyanogen, hydrocyanic acid, nitrogen peroxide.
- **Poison, Class B:** A DOT term for liquid, solid, paste or semi-solid substance, other than Class A poisons or irritating materials, that are known (or presumed on the basis of animal tests) to be so toxic to humans that they are a hazard to health during transportation.
- **Explosive:** A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.
- **Compressed Gas:** A gas which when packaged under pressure is entirely gaseous at -50 °C; including all gases with a critical temperature ≤-50 °C. (See Section 11 of the Safety Manual for more information on compressed gas cylinders).
- **Cryogenics:** Substances which are extremely cold such as liquid nitrogen, liquid helium and dry ice. These substances may also become asphyxiation hazards if spilled in non-ventilated areas.

## **2. Ordering Hazardous Materials/Chemicals:**

- There are specific guidelines that must be followed when ordering hazardous materials and chemicals. It is essential to determine how materials will be stored and used in order to avoid ordering materials that we do not have the capability of maintaining or disposing. In addition, there are some chemicals that require special training.
- Before ordering any materials (biological/radioactive/chemical):
  - Search for least hazardous option or consider substituting a hazardous chemical for something less hazardous or non-hazardous. Always look for the safest alternative.
  - Consider checking with other departments that use similar chemicals before placing an order to see if they have excess of the same chemical that you may be able to use.
  - Only order the quantity of the substance that you are going to use. Do not order excess or bulk if it is not needed.
  - When ordering biological materials, prior approval to order biological materials must be obtained from the department's Biological Safety Officer, EHS, and the Institutional Biosafety Committee (IBC).
  - Radioactive materials require prior approval from the Radiation Safety Officer.
  - Highly toxic materials or those requiring special treatment (storage conditions, containment, and

disposal) must be approved by EHS or the Chemical Hygiene Officer. EHS must be contacted prior to ordering any Class A carcinogens such as:

- Arsenic and arsenic compounds
  - Asbestos
  - Benzene
  - Benzidine
  - Chloromethyl methyl ether
  - Chromium and chromium compounds
  - Diethylstilbestrol
  - 2-Naphthylamine
  - Vinyl chloride
- The following chemicals have specific OSHA regulations which include required personal protective equipment, monitoring and training. EHS must be notified of their use.
- 2-Acetylaminofluorene
  - Acrylonitrile
  - alpha-Naphthylamine
  - 4-Aminodiphenyl
  - Asbestos
  - Benzene
  - Benzidine
  - Benzine
  - beta-Naphthylamine
  - beta-Propiolactone
  - bis-Chloromethyl ether
  - 1, 3-Butadiene
  - Cadmium
  - 1,2 Dibromo-3-chloropropane (DBCP)
  - 3,3'-Dichlorobenzidine (and its salts)
  - 4-Dimethylaminoazobenzene
  - thyleneimine
  - Ethylene oxide
  - Formaldehyde
  - Inorganic Arsenic
  - Lead
  - Methyl chloromethyl ether
  - Methylene chloride
  - Methylenedianiline
  - N-Nitrosodimethylamine
  - Vinyl chloride

### **3. Shipping/Transporting Hazardous Materials/Chemicals:**

- Absolutely no hazardous materials or chemicals may be brought from home to UNE.
- Absolutely no hazardous materials or chemicals may be brought from UNE to home.
- Transportation of hazardous materials is strictly prohibited. If a hazardous substance or chemical must be transported between the Biddeford and Portland campuses, you must contact EHS.
- Shipping of chemicals/biohazardous materials and dangerous goods from UNE is strictly regulated and **MUST** be done through the EHS Department or by an individual with specialized training (such as DOT/IATA) accepted by EHS. **This includes dry ice.**

#### **4. Receiving Hazardous Materials/Chemicals on Biddeford Campus:**

- All hazardous materials/chemicals are received by the UNE Mailroom (either Portland or Biddeford Campus depending on where they were shipped).
- Damaged packages/containers will be refused by employees in the UNE Mailroom if they arrive in an unsafe condition.
- The packages are sorted and then delivered to the appropriate departments. It is then the responsibility of the department to store the material properly according to regulations.
- The department the material was delivered to will then be responsible for contacting EHS to bar code the substance and add it to the Vertere Chemical Inventory System or bar code the chemical themselves if they have the equipment. The department will then forward one copy of the SDS to EHS and keep a copy for the lab/storage location's SDS book/file.

#### **5. Storage of Hazardous Materials/ Chemicals:**

- The University requires the use of an approved chemical segregation system (such as the Flinn Storage System [Appendix W] or UNE Segregation Table [Appendix S] of the UNE Safety Manual). The following guidelines will be observed for storage of hazardous materials/ chemicals:
  - Hazardous materials/ chemicals must be stored based on their compatibility, not simply in alphabetical order. Store materials of the same hazard together (such as: flammable with flammable and oxidizers with oxidizers).
  - Hazardous substances should be stored in an orderly manner with older products most accessible and the newer products least accessible.
  - Good housekeeping must be practiced in areas where hazardous products are stored.
  - All hazardous materials/chemicals from the manufacturer must be properly labeled, including:
    - Product Identifier
    - Pictogram (GHS system)
    - Signal Word
    - Hazard Statement(s)
    - Precautionary Statement(s)
    - Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party.
  - All in-house (secondary labels) must include the following:
    - Product Identifier
    - Words, pictures, symbols, or combinations thereof, which provide information regarding the hazards of the chemical.
  - Hazardous materials/chemicals will be stored in original containers in which they were packaged at the manufacturing plant. If this is not practical, these products should be transferred according to manufacturers' recommendations into containers that are constructed to withstand the effects of the product over the maximum storage time and are labeled properly per the above standards.
- Handling of Hazardous materials/chemicals:
  - Consult Section 17 on Laboratory Safety or the Chemical Hygiene Plan (CHP) in the specific guidelines and required personal protective equipment.
- Chemical Management Inventory System:
  - UNE uses a web-based Chemical Management Inventory system with Vertere software. All chemicals are added to the software so we have an accurate, up-to-date list of what chemicals are on each campus, where they are located, who ordered them, and the quantity of what is being stored. Once they are added to the system, a unique bar code is created for each container and then affixed to the container for tracking purposes.

- Exclusions: The following list of substances are not required to be inventoried:
  - Culture Media
  - Buffer Solutions
  - Test Kits
  - Bio-Molecules (enzymes and proteins)
  - Consumer products (such as bleach, aspirin, corn oil, etc.)
- Inventory Procedure:
  - Chemicals are received at the UNE Mailroom/Shipping-Receiving area.
  - NOTE: If the package appears to be damaged or leaking upon delivery, the UNE Mailroom staff will refuse the shipment and send it back to the supplier. If there is any spilled material, **the employee will evacuate the area and promptly notify EHS.**
  - UNE Mailroom employee will deliver all chemical packages to the designated department on campus.
  - The department that receives the chemical will then perform the following steps:
    - Step 1: Inspect the incoming package for any damage or leaks.
    - Step 2: Ensure the chemical container is appropriately labeled.
    - Step 3: Add the item to the electronic chemical management inventory system (including chemical name, manufacturer, quantity, storage location, and addressee's name) or have EHS add it to the inventory.
    - Step 4: Barcode the item with a UNE chemical inventory barcode or contact EHS to barcode if they do not have the equipment.
    - Step 5: Retain a copy of the SDS and forward a copy to EHS.
  - Deleting/Changing/Sharing Chemicals:
    - To remove a chemical from the electronic chemical management system if it has been completely used and the chemical container is then empty, remove the UNE barcode and stick it to the "Chemical Inventory Removal Form" and provide the form with all bar codes to EHS every month or email EHS with each the barcode number to report that the substance has been used and no longer needs to be in the inventory.
    - To remove a chemical because it is old or no longer needed but there is still some left in the container, contact EHS so the item can be added to the "UNE Shared Chemical List" or so it can be collected and treated as hazardous waste. EHS will update the inventory at that time.
    - To update the chemical inventory system to reflect that the item has been given to another department/lab/staff member, please email EHS with the bar code number on the container and who/where it is being transferred to so the online system can be updated accordingly.
- UNE Chemical Sharing Program: As an alternative to sending out unwanted chemicals as hazardous waste, if you have a reasonable amount of a chemical that you are not going to use, you may offer it to other labs in the UNE lab community by notifying EHS to post it in the UNE Lab Newsletter. Once the chemical is posted, other labs can email EHS to obtain the chemical on a first come, first serve basis. If no one would like the chemical, it will be deleted from the chemical inventory and sent out as hazardous waste.
 

**\*\*Please note it is important to notify EHS before donating your substance to another department or individual so that the chemical inventory is accurate. \*\***
- Chemical Reconciliations: Quarterly chemical reconciliations will be performed by EHS for each lab to ensure an accurate and up-to-date record of all chemicals on campus.
- Contractor Owned Chemicals:
  - According to OSHA's Hazard Communication Standard Guidelines, "employers are responsible for protecting their employees from all hazardous chemicals known to be present, including those brought on-site by contractors." Contractors who bring materials on-site are required to notify and provide a

list of materials and quantities to EHS. A decision will be made as to whether the material(s) will be allowed on-site.

- Any spills or accidental discharges of hazardous materials are to be immediately reported to the University's Director of Environmental Health and Safety or alternate EHS staff member, if the director is not available.
- If it becomes necessary for the contractor to dispose of any chemicals, paint, or other waste materials, the University, through its Director of Environmental Health and Safety, will assist in arranging for such disposal, but the contractor is responsible for all expenses associated with disposal of Contractor generated wastes.
- The Contractor is responsible for coordinating the flushing or disinfection of any utility lines with the Facilities Management Department and the University of New England's Waste Water Treatment Plant Operator prior to initiating these activities. The Contractor must also place into secondary containment all petroleum products and submit an inventory of those products to the EHS Department.
- If the Contractor encounters or suspects hazardous or toxic materials, the Contractor shall immediately stop work in the associated area and advise the University. The work in the area shall not resume until the hazardous materials has been removed or mitigated in compliance with all federal and state regulations.
- The University maintains a complete set of Safety Data Sheets (SDS), for any potential chemical hazards. The Contractor shall have on hand SDS for all hazardous materials used on the "Project". The Contractor shall comply with all applicable Federal, State and local laws, rules and regulations, including those of the US Environmental Protection Agency, Occupational Safety and Health Administration, and the State of Maine, Department of Environmental Protection.
- Spill Procedures: All spill response and spill cleanup procedures can be found in the UNE Safety Manual in Section 17-Lab Safety.
- Waste Reduction: By state law, the University is required to strive to reduce the amount of hazardous waste it generates. Therefore, University departments should take the following measures:
  - Buy only those amounts of hazardous materials/chemicals which can be used before the expiration date of the material.
  - Determine if someone else in the department has a legitimate need for, and can use, the product by utilizing the UNE Chemical Sharing Program.
- Employee Access to Safety Data Sheets (SDS's):
  - Employees have the right to obtain copies of any SDS(s) and/or list(s) of hazardous chemicals used in their workplace.
  - There are three ways to obtain a Safety Data Sheet:
    - Contact your supervisor or the Chemical Hygiene Officer,
    - Access SDS through web links, or
    - Contact EHS.
  - Every work area must have copies of SDS's relevant to their work. Copies of SDS's for the entire University are kept in the Facilities office on each campus.
  - Safety Data Sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, in all cases the required information is provided for each hazardous chemical,
  - SDS' must be readily accessible during each work shift to employees when they are in their work area(s).
  - Electronic access and other alternatives to maintaining paper copies of the safety data sheets are

permitted as long as no barriers to immediate employee access in each workplace are created by such options.

### SECTION 18.3

### RECORDKEEPING

- Safety Data Sheets (SDS): SDS' must be readily accessible during each work shift to employees when they are in their work area(s)
  - Electronic access and other alternatives to maintaining paper copies of the material safety data sheets are permitted as long as no barriers to immediate employee access in each workplace are created by such options.
  - SDS' will be maintained by the chemical user of the chemical.
  - SDS' for substances no longer utilized at UNE will be maintained for a period of 30 years by EHS.
- The University Chemical Inventory is maintained by EHS
  - All applicable departments must provide an inventory of the hazardous chemicals that are in use.

### SECTION 19.0

### PERSONAL PROTECTIVE EQUIPMENT

#### 1. Introduction:

- 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. This section 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/repaired/replenished as needed.

### SECTION 19.1

### RESPONSIBILITIES

#### 1. Environmental Health and Safety Department:

- Provide job hazard assessment (JHA) when needed to determine what PPE will be used for what tasks.
- Provide options for different types of PPE and ensure they work for the specified application.
- Work with supervisors and department heads to make sure employees are wearing the equipment properly where required.
- Provide training when necessary on PPE.

#### 2. Supervisors and Department Heads:

- Notify EHS if a JHA is needed or if a specific job description or task needs to be evaluated for required PPE.
- Enforce all PPE rules and regulations for their department.
- Make sure all employees attend required training sessions.
- Communicate with EHS as needed to make any needed changes for PPE.

#### 3. Employees/Contractors/Students

- Adhere to all PPE policies and procedures set forth by EHS.
- Attend all required training sessions on PPE.
- Communicate to Supervisor/Department Head if an evaluation is needed of your job to access the need for PPE.
- Report to your Supervisor/Department Head if your PPE is defective, if it does not fit, or does not work

properly so you can obtain new PPE.

## SECTION 19.2

## PPE POLICIES AND PROCEDURES

### 1. 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.

### 2. 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.

### 3. Face and eye 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.
  - Any other operation 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.
- 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, and shoe covers, etc. will be evaluated by department supervisors and EHS.
- Respirators:
  - Respirators will be selected, used, and maintained in accordance with the Respiratory Protection Program in Section 7 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 Section 16 for the Hearing Conservation Program for more specific information. Employees should have a baseline audiogram before they begin the hearing conservation program.
- Hardhats:
  - Hardhats meeting ANSI Z89. 2 will be worn where there are overhead hazards or severe bump exposures or in posted hardhat areas.
- Chain Saw Chaps:
  - Will be used during all chain saw operations.
- Safety Belts and Lanyards:
  - Safety belts, lifelines and lanyards will be worn by all maintenance personnel when work demands they be above 6' above the ground or solidly planked floor or when 10' above the ground or floor when working on staging or a roof. When using ladders this requirement is not in affect.
  - All safety belt and lanyard hardware will be drop forged or pressed steel, cadmium plated.
  - Belts and lanyards will be a minimum of 1/2" nylon or equivalent with a maximum length to provide for a fall of no greater than 6'.
  - All lanyards will have a nominal breaking strength of 5,400lbs.
  - Employees will be properly trained in advance on the use of fall protection.
  - All Safety Belts and Lanyards will be inspected thoroughly before each use.
  - Unauthorized employees will not be permitted to use fall protection.
- Lab Coats:
  - Lab coats shall be worn in all laboratory settings along with long pants (when feasible) and close-toed shoes. Please refer to Chemical Hygiene Plan for more information on laboratory PPE.

<b>SECTION 19.3</b>	<b>TRAINING AND RECORDKEEPING</b>
<p><b>1. Training:</b></p> <ul style="list-style-type: none"> <li>• Each employee who is required to use PPE will be trained to know at least the following: <ul style="list-style-type: none"> <li>○ When PPE is necessary</li> <li>○ What PPE is necessary</li> <li>○ How to properly don, doff, adjust, and wear PPE</li> <li>○ The limitations of PPE</li> <li>○ The proper care, maintenance, useful life and disposal of PPE.</li> </ul> </li> </ul> <p><b>2. Record Keeping:</b></p> <ul style="list-style-type: none"> <li>• Hazard assessment records will be maintained by EHS and the department in which the employee works.</li> <li>• Training records of topics covered by this section will be maintained by the Department of Human Resources for a minimum of three years, unless otherwise specified.</li> </ul>	
<b>SECTION 20.0</b>	<b>OFFICE SAFETY AND ERGONOMICS</b>
<p><b>1. Introduction:</b></p> <ul style="list-style-type: none"> <li>• This section discusses potential hazards encountered in normal office environments and the precautions to be taken to avoid them. All injuries should be reported to a supervisor immediately following the occurrence.</li> </ul>	
<b>SECTION 20.1</b>	<b>RESPONSIBILITIES</b>
<p><b>1. Environmental, Health and Safety Department</b></p> <ul style="list-style-type: none"> <li>• Provide adequate training and awareness of ergonomics and office safety.</li> <li>• Provide suggestions to managers, supervisors and department heads on administrative and engineering controls related to office safety</li> <li>• Provide evaluations of employee work stations when employee exhibits symptoms or pain related to their daily work activities.</li> </ul> <p><b>2. Managers, Supervisors, Department Heads</b></p> <ul style="list-style-type: none"> <li>• Address any employee complaints of pain associated with the configuration of their workstation or the equipment provided that may not suit the employee.</li> <li>• Provide other options if an employee complains of symptoms of injuries.</li> <li>• Work with EHS to ensure employee is not exposed to any ergonomic injuries.</li> <li>• Ensure employees attend required training sessions.</li> </ul> <p><b>3. Employee</b></p> <ul style="list-style-type: none"> <li>• Report any problems with workstation setup or an injuries associated with workstation setup.</li> <li>• Attend required training sessions as necessary.</li> <li>• Attempt to follow recommended ergonomic guidelines to reduce workplace injuries.</li> </ul>	
<b>SECTION 20.2</b>	<b>POLICIES AND PROCEDURES</b>
<p><b>1. General Procedures:</b></p> <ul style="list-style-type: none"> <li>• No materials (supplies, chemicals, books, paper, bottles, boxes, equipment, tools, or other items) will be stored on top of cabinets, file banks, book cases, or other places in such a way that they may be dislodged and fall.</li> <li>• Only one file cabinet drawer should be opened at a time to avoid the possibility of overturning the cabinet.</li> </ul>	

Do not leave any file cabinet drawers opened when not in use, to prevent a tripping hazard.

- Cords will be kept out of the aisles and walkways to prevent tripping hazards.
- Avoid leaning to the limit in spring-loaded swivel chairs.
- New furniture will be checked for sharp edges, burrs, or damaged places that may cause cuts or snags.
- File and desk drawers, as well as bookcase and cabinet doors will be closed when not in use.
- Paper cutters will be provided with proper guards.
- A proper step-stool or roll-away platform ladder will be used when it is necessary to reach excessive heights. *Chairs or other office furniture will not be used in place of this equipment.*
- Coffee pots and hot plates will be placed where they will not be upset, dislodged, or inadvertently contacted and will be turned off at the end of each day.
- Razor blades, knives, scalpels, scissors, pipettes, or other sharp instruments will be stored carefully to avoid cuts. Razor blades will be used only in proper holders.
- Any malfunction of equipment, mechanical or electrical, will be reported to supervisors for proper repair or replacement,
- Use of personal electrical appliances (desk lights, fans, heaters, extension cords, etc.) will be approved by Facilities Management. Personal electrical appliances and extension cords will meet the following criteria as a minimum:
  - UL listed and grounded.
  - Damaged devices and cords must be repaired by a qualified person.
  - Plugs having a loose insulating disk covering the screw terminals are not permitted.
- Carrying objects of excessive weight will be avoided.
- Materials will not be carried in such a manner as to block the carrier's view of the walkway or possible obstructions.
- When selecting chemicals or hazardous materials, the requirements of Section 8 (Hazard Communication) will apply.

## **2. Ergonomics:**

- Per OSHA, "Ergonomics is the science of fitting workplace conditions and job demands to the capabilities of the working population." There are many ways to keep our bodies healthy and safe around the office.
- Ergonomic Risk Factors:
  - Repetitive, forceful, or prolonged exertions of the hands (typing included).
  - Frequent or heavy lifting
  - Pushing, pulling, or carrying of heavy objects;
  - Prolonged awkward postures (including sitting at your desk).
  - (Vibration and cold may add risk to these work conditions)

## **3. Workstations**

- Work Area: When setting up a work area, make sure that the space is large enough for you to spread out comfortably and allows for a full range of motion, which can be a special concern for those with especially long limbs. You should also leave plenty of room to arrange the items you use most frequently in such a way that there is no strain for you to reach them.
- Laptops: When using a laptop, it's best to use it while it's on a table rather than on your lap. If you use it frequently, you might be better served by using a separate keyboard and mouse rather than using the built-in keyboard and touch pad to reduce strain on your wrists and hands.
- Keyboard: If you spend a lot of your workday typing, where you place your keyboard and how you use it can greatly affect your risk for getting RSIs (repetitive stress injuries) like carpal tunnel syndrome. Your keyboard should be placed so that your arms are parallel to your thighs. If your desk doesn't allow for this, try getting a keyboard tray. You'll also want to do your best to use good typing techniques, keeping your

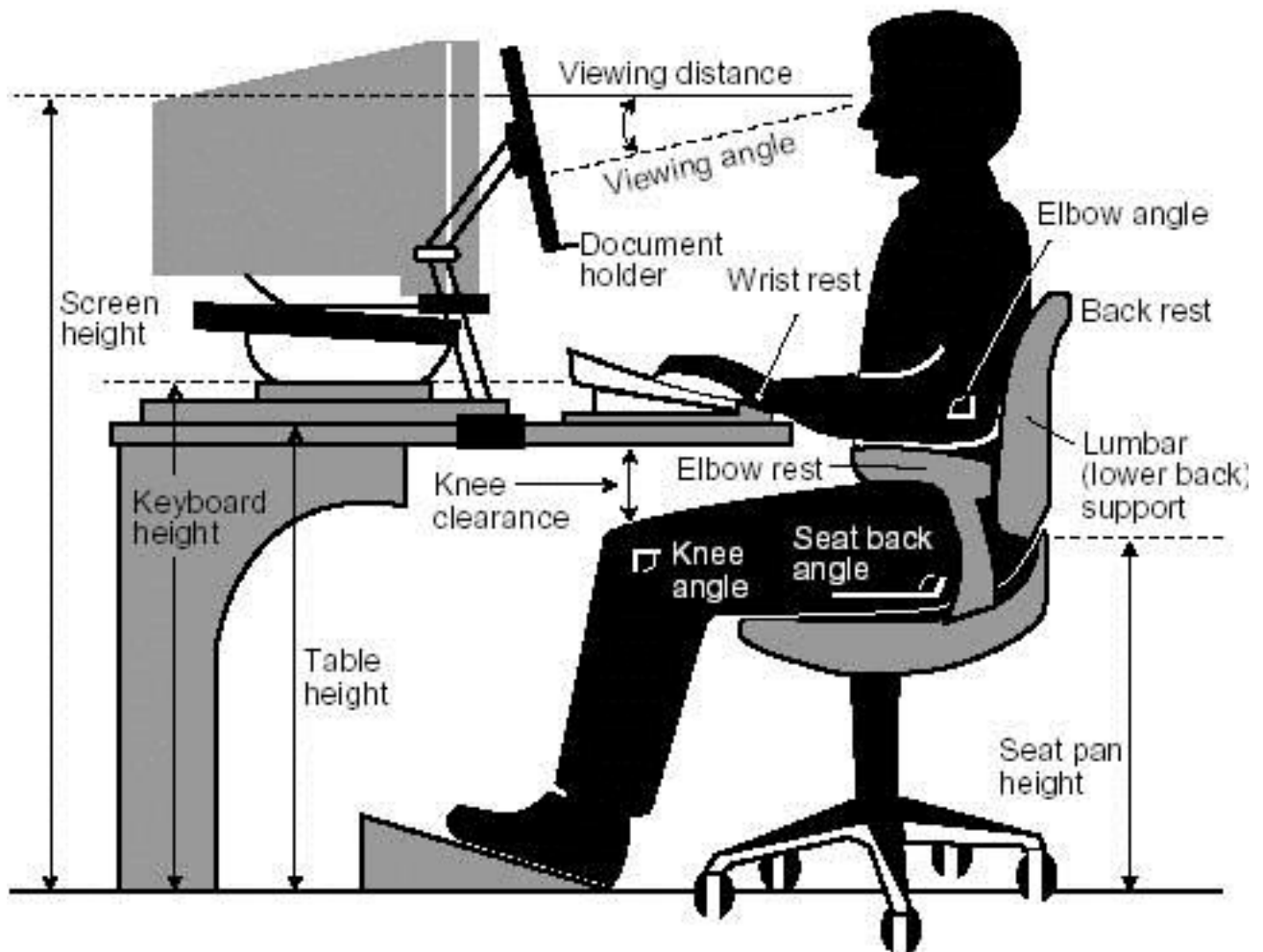
wrists elevated and not hitting the keys too hard.

- Mouse: When setting up your desk, make sure to keep your mouse easily within reach and try not to grip it too tightly, as doing so can strain the muscles in your hand. If you find that using a mouse bothers you too much, try using an alternate input device like a trackball or a touch pad.
- Desk: There is no one-size-fits-all desk, so choose one that is right for you. You can help reduce your chance of injury by getting a document holder, arranging your electronics within your reach and making sure that the area underneath your desk remains uncluttered.
- Chair: A good chair can do wonders, as sitting is much harder on your back than it might appear to be. Make sure to keep your lower back supported, and adjust your chair so that you can easily reach your keyboard and mouse. If this means raising the chair so that your feet don't quite reach the floor, get a footrest to help keep your feet from dangling.
- Monitor: Improperly configured monitors can cause a great deal of eyestrain, resulting in headaches and difficulty concentrating. Center your monitor in front of you at a comfortable distance, and adjust the brightness settings so that it's easy on your eyes. Make sure to take breaks from staring at your screen, too. Glare can be a problem as well, and if you can't seem to eliminate it, use a glass glare filter.
- Work Habits: You can arrange your work habits so that you don't put undue stress on any part of your body. Make sure to take frequent breaks, get up and walk around, and change positions frequently so that repetitive tasks and static work won't take their tolls.
- Phone: It can be tempting to multitask and cradle your phone receiver between your neck and shoulder. However, this should be avoided, as it can create a great deal of strain in your neck muscles. If you need to have your hands free, try using a headset or put the call on speakerphone.
- Working with the body in a neutral position reduces stress and strain on the muscles, tendons, and skeletal system and reduces your risk of developing a musculoskeletal disorder (MSD). The following are important considerations when attempting to maintain neutral body postures while working at the computer workstation:
  - Hands, wrists, and forearms are straight, in-line and roughly parallel to the floor.
  - Head is level or bent slightly forward, forward facing, and balanced. Generally it is in-line with the torso.
  - Shoulders are relaxed and upper arms hang normally at the side of the body.
  - Elbows stay in close to the body and are bent between 90 and 120 degrees.
  - Feet are fully supported by the floor or a footrest may be used if the desk height is not adjustable.
  - Back is fully supported with appropriate lumbar support when sitting vertical or leaning back slightly.
  - Thighs and hips are supported by a well-padded seat and generally parallel to the floor.
  - Knees are about the same height as the hips with the feet slightly forward.
- Regardless of how good your working posture is, working in the same posture or sitting still for prolonged periods is not healthy. You should change your working position frequently throughout the day in the following ways:
  - Make small adjustments to your chair or backrest.
  - Stretch your fingers, hands, arms, and torso.
  - Stand up and walk around for a few minutes periodically.
- Lighting
  - Bright lights shining on the display screen "wash out" images, making it difficult to clearly see your work. Straining to view objects on the screen can lead to eye fatigue. If lighting on your computer screen creates glare, you should request a screen protector designed to reduce glare from your Supervisor for your computer. If there is not enough lighting in your area, you may want to consider a desk light for reading.

#### 4. Musculoskeletal Disorders:

- Work performed at a computer may require sitting still for considerable time and usually involves small frequent movements of the eyes, head, arms, and fingers. Retaining a fixed posture over long periods of time causes muscle fatigue and, if this practice is consistent, can eventually lead to muscle pain and injury.
- People who work on computers are also subject to a potential risk of developing various musculoskeletal disorders such as carpal tunnel syndrome, and tendonitis. Musculoskeletal disorders are injuries to the muscles, joints, tendons, or nerves that are caused or made worse by work related risk factors. Early symptoms of musculoskeletal disorders include pain and swelling, numbness and tingling (hands falling asleep), loss of strength, and reduced range of motion.
- If workers have any of these symptoms, they should report them to their employers as soon as possible. If these symptoms are not treated early, they can result in loss of strength in affected area, chronic pain, or permanent disability.
- It is important to take frequent breaks from sitting at the computer, perform stretching exercises regularly and make sure your workstation is setup in a way that is conducive to preventing injuries.

#### CORRECT ANGLES FOR WORKSTATION ERGONOMICS:



<b>SECTION 20.3</b>	<b>ERGONOMICS TRAINING</b>
<p><b>1. Training:</b></p> <ul style="list-style-type: none"> <li>• All new hires will be required to review the contents of this section.</li> <li>• New hires will complete the Ergonomics module online as part of their initial training.</li> <li>• Employees will take the Ergonomics module as part of their annual training requirements online.</li> </ul>	
<b>SECTION 21.0</b>	<b>ASBESTOS-CONTAINING MATERIALS OPERATIONS &amp; MAINTENANCE (O&amp;M) PROGRAM</b>
<p><b>1. Introduction:</b></p> <ul style="list-style-type: none"> <li>• Asbestos is a group of naturally occurring minerals that separate into fibers. The fibers have properties that have been found to be useful in many applications. Fibers are incombustible and have therefore been used in fire retardant and other asbestos-containing materials (ACM). In addition, fibers have good thermal and electrical insulating properties. The most common place to find asbestos in buildings is in cement products, fireproof textiles, vinyl floor tiles and thermal and acoustical insulation and other asbestos-containing building materials (ACBM)</li> <li>• Exposure to asbestos occurs when individuals inhale fibers. The size and shape of asbestos fibers allow them to be airborne for long periods of time. Therefore, the risk of asbestos exposure is associated with soft asbestos containing material, or "friable" material, which can produce airborne fibers. (Friable material is material that can be pulverized, crushed or crumbled into a powder). <b>NOT ALL FRIABLE BUILDING MATERIALS CONTAIN ASBESTOS.</b></li> <li>• Exposure to asbestos has been associated with lung disease (asbestosis) and various cancers including lung, stomach, and colon cancer and a rare disease called mesothelioma. The risk of lung cancer is increased with cigarette smoking.</li> <li>• Fibers are released from friable material due to deterioration, direct contact and damage. Fallout from deterioration is usually small. Fiber release from direct contact or damage varies. Direct contact can range from hanging pictures to removal of ceiling tiles. Damage may occur from water leaks or maintenance activities.</li> <li>• Hard or "non-friable" asbestos containing materials, such as floor tile, do not pose a significant health threat. Asbestos fibers in hard materials are bound or encased in the material and do not become airborne unless they are machined, cut, sanded, or otherwise physically agitated.</li> <li>• The policies and procedures in this Operations &amp; Maintenance (O&amp;M) Plan have been developed to minimize the potential for exposure to ACM. The following information and procedures are to be used as Guidelines for recognition, maintenance and potential emergency response to damage of ACM or presumed ACM (PACM). The procedures are not meant to cover every possible exposure situation. If there is any question on what procedures to follow, the identified campus asbestos response person/team and the environmental, health and EHS Director should be contacted. If all students, staff, and faculty follow this plan, then the University of New England (UNE) will enjoy a healthier environment.</li> </ul>	

SECTION 21.1	RESPONSIBILITIES
<ul style="list-style-type: none"> <li>• Unless otherwise specified, responsibilities will be defined in the introduction of UNE's health and safety manual (Responsibilities Section).</li> </ul> <p><b>1. The Environmental Health and Safety Department (EHS)</b> will have overall responsibility for this Asbestos O&amp;M Plan. The EHS Director and Campus Planner will assist others at UNE in determining whether or not a suspect material is ACM and in evaluating the material's condition, friability, impact, and subsequent hazard.</p> <ul style="list-style-type: none"> <li>• The EHS Director will provide guidance to others at UNE as to the degree of hazard posed by ACM or PACM and to what extent controls are required (e. g., restricted access, repair, encapsulation, enclosure, removal, abatement, etc.).</li> <li>• The EHS Director, with the assistance of the Campus Planning Department, will coordinate outside consultant and abatement contractor services including air monitoring, bulk material sampling and testing, building surveying, abatement design, bid management, and ACM abatement activities.</li> <li>• The EHS Director will maintain records of O&amp;M related activities including training, notices, periodic surveillance, permits, respirator fit tests, personal or area monitoring, sampling or survey results, and abatement records. Refer to Record keeping of this section for more information.</li> </ul> <p><b>2. O&amp;M Response Team Members:</b></p> <ul style="list-style-type: none"> <li>• O&amp;M Response Team (ORT) Members have had 16 hours of specialized O&amp;M training in asbestos and can perform only minor work on or around ACM (i.e., up to 3 linear feet (lf) or 3 square feet (sf) of material). It is a violation of State Law to exceed these amounts of friable ACM handling without additional training and certification with the Maine Department of Environmental Protection (DEP). This will be an outside vendor that UNE contracts for this specialty.</li> <li>• ORT Members will perform their work in accordance with their training, applicable rules and regulations, and UNE policies.</li> </ul> <p><b>3. Department Heads/Supervisors/Faculty:</b></p> <ul style="list-style-type: none"> <li>• Department Heads, Supervisors, and Faculty shall inform or notify the ORT or EHS Director regarding any suspect materials or ACM requiring O&amp;M.</li> </ul> <p><b>4. Resident Assistants:</b></p> <ul style="list-style-type: none"> <li>• Resident Assistants (RAs) will report any suspect materials or ACM conditions requiring O&amp;M to Facilities Management or EHS Director.</li> <li>• RAs will provide the UNE Awareness Handout to affected or interested students and will provide students on their floor with information as necessary.</li> </ul> <p><b>5. Faculty/Staff/Students:</b></p> <ul style="list-style-type: none"> <li>• Faculty, staff, and students will report any suspect materials or ACM requiring O&amp;M to Facilities Management or EHS Director.</li> </ul>	
SECTION 21.2	ASBESTOS POLICIES AND PROCEDURES
<p><b>1. Introduction:</b> Several buildings have ACM or PACM, such as thermal system insulation (TSI including pipe cover/mudded fittings), sprayed on or troweled on surfacing materials (plaster ceilings or walls), and miscellaneous materials (ceiling tiles or floor tiles). The following sections address procedures for handling planned and unplanned maintenance and emergency response activities in these buildings. These guidelines will be reviewed and updated as new information becomes available, and at least annually by the EHS Director.</p> <p><b>2. Medical Surveillance:</b></p> <ul style="list-style-type: none"> <li>• UNE employees identified as Class III Asbestos O&amp;M workers are required to receive medical surveillance</li> </ul>	

will use the services of the designated off-site employee healthcare provider for OSHA-mandated physicals and follow-up.

- In addition, UNE employees who are required to wear tight-fitting respirators as part of their job duties will receive an annual medical evaluation and a pulmonary function test (PFT) which will comply with the table in 29 CFR 1910.1001.

### **3. Respiratory Protection:**

- Respiratory protection will be provided in compliance with OSHA's asbestos regulations.
- A half-face negative pressure air-purifying respirator equipped with high efficiency particulate air (HEPA) cartridges (or filters) will be provided to UNE Class III Asbestos O&M workers.
- All respirators will be approved by the National Institute for Occupational Safety and Health (NIOSH). Respirators will be qualitatively fit tested using iso-amyl acetate (IAA or "banana oil") and either irritant smoke, saccharin, or Bitrex by the EHS Department. (See the Respiratory Protection Program in Section 7 of the Safety Manual for more information).

### **4. Exposure Monitoring:**

- UNE employees will be monitored for asbestos exposure in accordance with the OSHA asbestos regulations as needed.
- Personal exposure monitoring will be performed for both the 8-hour PEL as well as the 30-minute excursion limit (EL, often referred to as a short-term exposure limit [STEL]).
  - The EHS Director will assist with providing and performing the exposure monitoring.
  - Each new O&M work task will require initial personal monitoring.
  - Samples will be collected, analyzed, and reported as a time-weighted average (TWA).
  - Personal samples will be analyzed by phase contrast microscopy (PCM) using the NIOSH 7400 Method for fiber counting. I
  - If other non-asbestos fibers are suspected, then the sample will be re-analyzed using transmission electron microscopy (TEM) as determined by the EHS Director.
- If an area is suspected of asbestos contamination, the EHS Director will be contacted and consulted. The EHS Director may contact UNE's asbestos consultant to assist in performing area sampling. Area samples may be analyzed by either PCM or TEM depending upon the situation.
- ACM Sampling and Surveys:
  - On the Biddeford an asbestos survey was originally performed in November of 1997. Copies of the Biddeford asbestos survey are located in the Facilities Management Office and with the EHS Director.
  - On the Portland campus a survey which indicates the locations of ACM and PACM on the Portland College Campus (PCC) was completed in the summer of 1999. Copies of the PCC Asbestos Survey are available in the Facilities Management Offices on PCC and UC, in the PCC Main Shop and with the EHS Director.
    - On the PCC Removal of ACM or PACM due to planned construction or maintenance activities will be marked on the floor plans as it occurs.
  - Suspect building (or other) materials are considered to be PACM until proved otherwise by sampling and analysis.
  - Samples of suspected ACM or ACBM will be analyzed using polarized light microscopy (PLM).
    - Floor tile samples that are initially found to be negative for asbestos will be re-analyzed using transmission electron microscopy (TEM).
    - The Maine DEP regulations require that a person collecting a sample or samples of materials for asbestos analysis must be trained and certified as an Asbestos Inspector.

### **5. Interface of Trades:**

- In the event Faculty, Staff, RA's or residents are impacted by ACM/PACM they will be informed of the



asbestos work as required by the OSHA asbestos regulations.

- The asbestos contractor, UNE project manager, or ORT will make the other workers or trades aware of any ACM in their area of work. OSHA regulated areas will be posted with the required asbestos danger sign and barrier tape as necessary.
- Project memos may also be used to inform or make others aware of the nature of the asbestos work as well as providing written documentation.
- **Work Control/Permit System:**
  - **General Information:**
    - Asbestos can be controlled in several ways. The best control is elimination. However, in some cases removal of asbestos will cause higher exposures than leaving ACM in place. In such cases, enclosing or encapsulating ACM or PACM can eliminate exposures from deterioration, and will reduce the chance of exposure due to damage. However, increased work and unique challenges are required should removal becomes necessary.
    - Professional asbestos management consultants and abatement contractors have been retained to respond to any incident 24 hours a day. However, our best management practice (BMP) is not to allow ACM or PACM to become damaged or disturbed by maintenance or renovation type activities.

#### **6. Planned construction, renovation or maintenance:**

- Determine if ACM or PACM will be affected by proposed construction, renovation or maintenance using the floor diagram notebook. If unsure or unable to identify the material, notify the EHS Director and Campus Planning.
- Determine the total area affected by activities.
  - If it is less than 1 sf or 1 lf:
    - Contact campus ORT member.
    - The ORT will enclose or eliminate access to the construction, renovation, or maintenance area;
    - Wet surfaces to reduce potential for airborne fiber, and
    - HEPA vacuum affected area during and after construction, renovation, or maintenance activities.
  - If greater than 1 sq. foot or 1 linear foot
    - Contact campus asbestos response team/member and EHS Department.
    - Determine locations affected or impacted.
    - Determine total area of ACM or PACM
    - EHS Director will contact asbestos consultant with information for bid.
    - EHS Director will obtain bids and hire contractor for abatement project.
    - The abatement project will include air monitoring before, during and after abatement.

#### **7. Unplanned maintenance:**

- Residence Halls:
  - The RA or resident should contact Facilities if damage occurs or is suspected.
  - The campus ORT will assess if ACM or PACM damage exists.
  - Damage will be classified as minor, moderate or major using the following definitions:
    - Minor: No visible fiber residue released from penetration or impact. Typically, areas less than 1 square inch. For example, small penetrations from thumbtacks or slight dimpling due to impact on ceiling.
    - Moderate: Visible fiber residue released. Typically, areas 1 square inch to 3 square or linear feet. For example, penetration from a plant hanger.
    - Major: Visible fiber residue released. Area larger than 3 square or linear feet. For example, dislodging a ceiling tile.
  - The ORT will take appropriate actions on assessed damage classification and notify the RA:

- Minor:
  - If damage is in an occupant room, the RA will provide an asbestos awareness handout to the occupant to re-enforce policy of managing damage to buildings.
  - If damage is in a general use area (e. g., a hallway), the RA will discuss the policy with all occupants at the next RA meeting.
- Moderate:
  - The campus ORT will coordinate air testing and removal of any residue from the damage. This may include isolation of the damage area, wet-wiping and HEPA-vacuuuming.
  - The EHS Director will schedule air monitoring of the area prior to, during, and after clean up to ensure safety of resident(s).
  - The EHS Director will meet with resident(s) to discuss policy and answer any questions.
- Major:
  - The campus EHS Director and the ORT will coordinate isolation of the damaged area
  - The EHS Director will contact UNE's consultant and abatement contractor as necessary to test the air quality and abate the damage.
  - Air monitoring will be coordinated prior to, during, and after clean up to ensure the air quality and safety of the residents.
  - If damage occurs in a resident room, the occupant will be relocated until abatement is finished and final air quality testing has been completed.
  - The occupant will not be allowed to remove any contaminated items or personal belongings from the room until abatement, visual evaluations, and final air quality testing has occurred.
- If damage occurs in the hallway or common areas, the consultant and EHS Director will determine how to isolate the damage. This may require relocation of several room occupants.
  - Occupants will be allowed to remove items and/or personal belongings that have not been affected by the damage from their room, as determined by the EHS Director.
- The EHS Director will meet with the resident(s) to discuss policy and answer any questions after abatement and monitoring.
- **Other Building Spaces**
  - Facilities should be contacted if damage occurs or is suspected.
  - The ORT will determine if ACM or PACM damage exists.
  - The amount of damage will be assessed.
  - If damage is less than 3 square or linear feet, Facilities will block access to area and remove any residue using wet methods and HEPA vacuum.
  - If damage is more than 3 square or linear feet, Facilities will attempt to minimize the damage and fiber release, and will block access to the area.
    - The EHS Director will be contacted. The EHS Director and Director of Facilities will schedule abatement and air monitoring.
    - If offices are affected, employees will be relocated until abatement and monitoring is finished.
    - The EHS Director will meet with any affected employees to answer questions after abatement and air monitoring.
- 8. ACM Condition Surveillance:**
  - All ACM and PACM will be periodically inspected by the ORT for changes in its condition.
  - Any deterioration or damage will be reported to the EHS Director and Campus Planning to determine any further actions, such as removal.
  - The surveillance events will be performed under the EHS Director's direction by ORT members familiar with that building and its ACBM.

- Surveillance results will be documented on an ACM Condition Surveillance Form (see Appendix F for a copy). Surveillance records will be maintained by the EHS Director.

## 9. O&M Work Practices and SOPs:

- Containment procedures:
  - For moderate and major damage the area will be contained to eliminate disturbance of ACM or PACM.
  - Barriers will be constructed with 6 mil polyethylene plastic sheets joined with folded seams and sealed with sealing tape at the seams and boundaries.
  - Signs will be posted that read as follows:
    - ASBESTOS HAZARD
    - NO UNAUTHORIZED PERSONNEL BEYOND THIS POINT
    - RESPIRATORY PROTECTION REQUIRED
  - The contaminated area will be kept under negative pressure during abatement. Areas of major damage (>3 lf/sf) can only be performed by an asbestos abatement contractor.
- Removal and disposal:
  - For moderate damage situations the ACM or PACM will be treated with a wetting agent (water) to reduce fiber release.
  - The ACM/PACM will be disposed of in leak tight containers, such as 6-mil polyethylene bags.
  - All clean up materials and containment materials will be disposed of in sealed plastic bags and treated as asbestos waste.
  - The area will be HEPA vacuumed.
  - If necessary, a second cleaning will occur after 24 hours to assure that any settled fibers have been removed.
  - The ACM/PACM and clean up materials will be placed in a lined 55-gallon drum for disposal. The drum will be labeled as containing asbestos waste and stored in a locked area.
- Housekeeping:
  - Areas identified as containing asbestos will be cleaned with wet mops and damp cloths and/or HEPA vacuumed.
  - All debris, vacuum filters, cloths and mop heads will be sealed in plastic bags and placed in an asbestos waste 55-gallon drum for disposal.
- Specific SOPs:
  - All specific O&M SOPs are available through EHS.

## 10. Waste Disposal:

- Asbestos waste is a "special waste" (rather than a "hazardous waste") and must be properly disposed of in compliance with Maine DEP and U. S. Environmental Protection Agency (EPA) regulations.
- Asbestos waste must be disposed of in a wet condition, and must be sealed in at least two 6-mil thick polyethylene disposal bags or layers of sheeting.
- It must be properly labeled.
- Asbestos waste must be disposed of at an EPA-approved landfill.
- Asbestos contractors performing abatement at UNE will dispose of the asbestos waste generated as part of the job or project.
  - They will provide UNE with a copy of the waste manifest and receipt showing proper transportation and disposal.
  - The waste manifest and receipt must be maintained with related project records and is maintained by the EHS Director.
- Asbestos waste generated by UNE's ORT must be properly stored until such time as it becomes convenient to have an asbestos abatement contractor dispose of it.

- Up to one cubic yard (approximately the amount that will fit comfortably in three (doubled) asbestos waste disposal bags and fit in a 55-gallon drum) may be temporarily stored.
- UNE stores the waste in a 55-gallon drum with the top lid or bung sealed and the drum labeled with an asbestos danger sign and the area around it marked with barricade tape and an OSHA warning sign.
- Storage of more than one cubic yard requires a license by the Maine DEP as an Asbestos Waste Storage Facility (AWSF).

**SECTION 21.3**

**TRAINING AND RECORDKEEPING**

**1. Training:**

- All facilities and housekeeping staff are trained annually in the identification of, handling of, proper cleaning and disposal techniques, of ACM/PACM.
- An outside vendor is used as an O&M currently. Should the University decide otherwise, the University provides special training to include who will serve as an asbestos O&M worker (16-hour initial training and annual 8-hour refresher training). This training will cover patching, repairing, encapsulating, and removing small amounts (>3 lf/sf) of ACM.

**2. Record Keeping:**

- Asbestos records are important legal documents and must be maintained properly.
- OSHA requires that medical and exposure records be maintained for at least 30 years beyond employment.
- Medical records of UNE employees are maintained by the UHC in accordance with privacy requirements.
- All other records related to asbestos are maintained by the EHS Director including training, notifications, respiratory protection and fit testing, periodic surveillances, O&M activities, exposure monitoring, abatements, survey results, permits, and waste manifests and receipts.
- Should UNE go out of business with no successor university, then asbestos-related medical and exposure records shall be forwarded to the Director of NIOSH as required by OSHA.

Records for training conducted by the EHS Director will be maintained in the Department of Human Resources for a minimum of three years, unless otherwise specified.

**SECTION 22.0**

**OIL CONTAINING DEVICES**

**1. Introduction:**

- The University of New England is required, by Federal Regulation, to implement a written Spill Prevention Control and Countermeasure (SPCC) program to address petroleum product handling.
- In response to this requirement, the University has implemented an Integrated Contingency Plan (ICP). The Integrated Contingency Plan describes how UNE handles emergencies associated with fires, injuries, and releases and spills of hazardous and extremely hazardous chemicals (collectively referred to as "hazardous materials"). Specifically, it describes:
  - The steps UNE takes to prevent "hazardous material incidents";
  - The response actions UNE employs to minimize or eliminate injuries to human health and the environment during "emergency and non-emergency incidents";
  - The remedial and corrective actions UNE implements after a "hazardous material emergency incident" to reduce or eliminate the possibility of such incidents reoccurring in the future; and
  - How UNE complies with a number of state and federal environmental and employee safety laws and rules.
- Internal Copies of the Integrated Contingency Plan:
  - Copies of the ICP are located at the following location: EHS Office

<b>SECTION 22.1</b>	<b>POLICIES AND PROCEDURES</b>
<p>1. All Oil Management Issues will be handled according to the UNE ICP and <b>UNE SPCC Plan</b>.</p>	
<b>SECTION 22.2</b>	<b>TRAINING AND RECORDKEEPING</b>
<p><b>1. Training:</b></p> <ul style="list-style-type: none"> <li>• All training will be performed according to the guidelines set forth in the ICP.</li> </ul> <p><b>2. Record Keeping:</b></p> <ul style="list-style-type: none"> <li>• All record keeping will be performed according to the guidelines set forth in ICP.</li> </ul>	
<b>SECTION 23.0</b>	<b>INDOOR AIR QUALITY</b>
<p><b>1. Introduction:</b></p> <ul style="list-style-type: none"> <li>• The Indoor Air Quality (IAQ) program at UNE was created to make certain that all occupants of all buildings on both campuses are able to breathe clean, healthy air that is not harmful to their health or safety in an acute or chronic way. Good IAQ should include comfortable temperature and humidity, adequate supply of fresh outdoor air, and control of pollutants from inside and outside of the building. This program was developed to respond to any indoor air quality concerns that building occupants report to EHS and put a process and procedure in place for reporting, investigation, and air monitoring that may be necessary.</li> <li>• Per OSHA, “The right ventilation and building care can prevent and fix IAQ problems. Although OSHA does not have IAQ standards, it does have standards about ventilation and standards on some of the air contaminants that can be involved in IAQ problems. OSHA responds to questions about standards with letters of interpretation”. OSHA also says “Employers are required to follow the General Duty Clause of the OSHA Act, which requires them to provide workers with a safe workplace that does not have any known hazards that cause or are likely to cause death or serious injury”.</li> <li>• Per the EPA, “A healthy indoor environment is one in which the surroundings contribute to productivity, comfort, and a sense of health and well-being. The indoor air is free from significant levels of odors, dust and contaminants and circulates to prevent stuffiness without creating drafts. Temperature and humidity are appropriate to the season and to the clothing and activity of the building occupants. There is enough light to illuminate work surfaces without creating glare and noise levels do not interfere with activities. Sanitation, drinking water, fire protection, and other factors affecting health and safety are well planned and properly managed”.</li> </ul>	
<b>SECTION 23.1</b>	<b>RESPONSIBILITIES</b>
<p><b>1. Environmental Health and Safety Department:</b></p> <ul style="list-style-type: none"> <li>• Respond to any calls from University building campuses at either site in a prompt manner to investigate the issue and see what the best course of action is.</li> <li>• Conduct any investigations, interviews, and air monitoring that needs to be done in response to an IAQ complaint and hire outside contractors when necessary to assist in the investigation and monitoring</li> </ul>	

process.

- Execute a solution to the IAQ complaint and follow up with building occupants to ensure all necessary improvements and corrections have been made and are effective.
- Work with the Facilities and HVAC staff to effectively manage the IAQ problem.
- Report all results to Management in an organized fashion and involve management in all major planning and decision making processes.

## **2. Facilities Department:**

- Assist EHS and outside contractors with IAQ investigations and resolutions when needed.
- Provide information that may be pertinent to the building's operations and HVAC systems.
- Report any air quality issues to the EHS department.
- Assure all building systems are operating as intended. This includes ventilation, plumbing, and electrical systems, as well as the building envelope.
- Carefully select products and processes used on jobs. This includes selecting products with low VOC's, alternative products with less hazardous chemicals, and products without added fragrance when possible.
- Use products and chemicals only as intended and follow directions on the label. When products having volatile chemicals or strong odors are used, provide as much ventilation as feasible and schedule work when the building is minimally occupied. Notify building occupants when odor-creating work will occur.

## **3. Employees/Staff/Faculty/Students:**

- Report any indoor air quality issues that are encountered to the EHS department.
- Provide detailed information on the IAQ issue such as dates, times, odors, symptoms, etc., when interviewed.
- Employees, Staff, Faculty, and students should make themselves accessible for questions and interactions throughout the air quality investigation.
- Clean work areas regularly. Remove excess papers, food crumbs and dust. If food or drink is spilled, clean it up immediately.
- Rotting food frequently causes foul odors so check desk drawers and old brown paper bags. Clean any cups, plates or other utensils used to prepare or consume food daily. Clean out microwaves and refrigerators (including the drip pan) at least once a month.
- Keep all ventilation grills and ducts clear. Don't place furniture, boxes, posters, or other items in locations where they will block airflow.
- Keep all exhaust ports and air inlets to electrical equipment clear. Overheating electronic equipment can produce irritating odors.
- Assure plants are well maintained and not overwatered. Overwatering can promote the growth of mold in the soil and on the plant or container (and drown the plant). Remove dead foliage regularly. Carefully follow directions on labels for fertilizers.
- Use all cleaning and office products only as recommended on the label. Be aware that products with a citrus odor can be irritating to some people, so avoid their use if possible. Whenever possible use cleaning products without added fragrances.
- Use perfumes, colognes, and scented lotions sparingly.
- If you notice an odor, check with occupants in adjacent rooms and floors to determine if the problem is

throughout the building or specific to your workspace. Ask if they are conducting any activities or know of any activities that might create a similar odor.

## SECTION 23.2

## POSSIBLE CAUSES OF AIR QUALITY ISSUES

There are several factors or causes that can produce Indoor Air Quality issues that include but are not limited to:

### 1. Sources Outside the Building:

- These sources include contaminated outdoor air, pollen, dust, fungal spores, industrial pollutants, general vehicle exhaust, emissions from nearby sources, exhaust from vehicles on nearby roads or in parking lots, or garages loading docks, odors from dumpsters, re-entrained (drawn back into the building) exhaust from the building itself or from neighboring buildings, unsanitary debris near the outdoor air intake, soil gas radon leakage from underground fuel tanks, contaminants from previous uses of the site (e.g., landfills), pesticides, moisture or standing water promoting excess microbial growth, rooftops after rainfall, and crawlspaces.

### 2. Equipment:

- HVAC system dust or dirt in ductwork or other components microbiological growth in drip pans, humidifiers, ductwork, coils, improper use of biocides, sealants, and/or cleaning compounds, improper venting of combustion products refrigerant leakage, emissions from office equipment (volatile organic compounds, ozone), supplies (solvents, toners, ammonia) emissions from shops, labs, cleaning processes, elevator motors and other mechanical systems.

### 3. Human Activities:

- Smoking, cooking, body odor, cosmetic odors.

### 4. Housekeeping Activities:

- Cleaning materials and procedures, emissions from stored supplies or trash, use of deodorizers and fragrances, airborne dust or dirt (e.g., circulated by sweeping and vacuuming).

### 5. Maintenance activities:

- Microorganisms in mist from improperly maintained cooling towers, airborne dust or dirt, volatile organic compounds from use of paint, caulk, adhesives, and other products, pesticides from pest control activities, emissions from stored supplies.

### 6. Unsanitary conditions:

- Water damage that causes: microbiological growth on or in soiled or water-damaged furnishings, microbiological growth in areas of surface condensation, standing water from clogged or poorly designed drains, dry traps that allow the passage of sewer gas.

### 7. Chemicals released from building components or furnishings:

- Volatile organic compounds or inorganic compounds.

### 8. Accidental events:

- Spills of water or other liquids, microbiological growth due to flooding, leaks from piping, and fire damage (soot, PCBs from electrical equipment, odors).

### 9. Special use areas and mixed use buildings:

- Laboratories, print shops, art rooms exercise rooms, and food preparation areas.

## 10. Building Redecorating/remodeling/repair:

- Emissions from new furnishings, dust and fibers from demolition, odors and volatile organic and inorganic compounds from paint, caulk, adhesives, and micro biologicals released from demolition or remodeling activities.

### SECTION 23.3

### SIGNS AND SYMPTOMS OF AIR QUALITY ISSUES

The effects of IAQ problems are often nonspecific symptoms rather than clearly defined illnesses. Symptoms commonly attributed to IAQ problems include: headache, fatigue, shortness of breath, sinus congestion, cough, sneezing, eye, nose, and throat irritation, skin irritation, dizziness, and nausea.

#### 1. Sick Building Syndrome (SBS)

- Sometimes used to describe cases in which building occupants experience acute health and comfort effects that are apparently linked to the time they spend in the building, but in which no specific illness or cause can be identified.
- The complaints may be localized in a particular room or zone or may be widespread throughout the building.
- Many different symptoms have been associated with SBS, including respiratory complaints, irritation, and fatigue.
- Analysis of air samples often fails to detect high concentrations of specific contaminants. The problem may be caused by any or all of the following: the combined effects of multiple pollutants at low concentrations, environmental stressors such as overheating, poor lighting, and noise, ergonomic stressors, job-related psychosocial stressors such as overcrowding and labor-management problems, or unknown factors.

#### 2. Building-related illness (BRI)

- This is a term referring to illness brought on by exposure to the building air, where symptoms of diagnosable illness are identified (certain allergies or infections) and can be directly attributed to environmental agents in the air. Legionnaire's disease and hypersensitivity pneumonitis are examples of BRI that can have serious, even life-threatening consequences.

**3. Multiple Chemical Sensitivity (MCS):** A small percentage of the population may be sensitive to a number of chemicals in indoor air, each of which may occur at very low concentrations.

### SECTION 23.4

### INDOOR AIR QUALITY POLICIES AND PROCEDURES

#### 1. **Procedures for Reporting an Indoor Air Quality Issue:**

- Please have the following information ready before calling to report an Indoor Air Quality Issue:
  - Your name, location, and a phone number where you can be reached.
  - The location of the air quality problem (building, room, area within the room).
  - Describe any odors that may be present and dates and times they occur.
  - How many people have been affected by the problem (please provide their names and numbers as well).
  - List any symptoms associated with the problem such as headaches, dizziness, etc.



- Report any chemicals or agents used in the area that may affect the investigation.
- Call UNE Security to notify the Environmental Health and Safety office. If it is off hours or it is an emergency, you will still call UNE Campus Security. Circumstances requiring immediate response include but are not limited to:
  - There have been complaints of headaches, nausea, and combustion odors. (As this could be a sign of a carbon monoxide or gas leak).
  - One or more occupants of your building have been diagnosed as having Legionnaire's disease.
  - Staff report that water from a roof leak has flooded a portion of the carpeting.
  - The building occupant feels the threat is dangerous to life or health (evacuation will be necessary in this circumstance).
- Once you have reported the issue, an investigation will begin through EHS or Security, whoever is notified. If there is no immediate danger, an investigation may take several days or weeks depending on how many parties will need to be involved and what action may need to be taken. All complaints will be investigated in a prompt manner and the EHS department will update the person reporting the problem as information becomes available. The following are considered high priority investigations, but not emergencies:
  - Inspection of the humidification system reveals an accumulation of mold.
  - A group of occupants has discovered that they share common symptoms of headaches, eye irritation, and respiratory complaints and decided that their problems are due to conditions in the building.
  - Immediately after delivery of new furnishings (furniture or carpeting), occupants complain of odors and discomfort.
  - Immediately after heavy cleaning has been done in the occupants work area.
  - Local news articles suggest that some buildings in the area have high indoor radon levels.
  - There is a suspicion of asbestos exposure.
  - Renovations are causing irritant dusts of concern to occupants.

## **2. Indoor Air Quality Investigations:**

- After an IAQ is reported to the appropriate party, an Indoor Air Quality investigation will begin immediately to ensure there is no immediate danger to life or health. Investigations include but are not limited to:
  - Surveying the area reported by looking for strange odors or causes of ventilation issues.
  - Looking at equipment and processes used in the area.
  - Interviewing occupants of the area to obtain more specific information.
  - Communicating with building users and Facilities/HVAC staff on possible issues.
  - Conducting air monitoring using several different methods and devices.
  - Calling in contractors if necessary to do more in depth air sampling or survey the ventilation systems.
  - Creating a report with detailed information on testing results.
  - Notification to all building occupants involved and all affected parties with the results of the testing.

## **3. Post-Investigation Procedures:**

- Once the problem has been identified, action will be taken by the appropriate parties to remediate the issue by correcting the problem. This could include but is not limited to:

- Correcting ventilation system issues
- Installing new equipment (ex- dehumidifiers, fume hoods, etc.)
- Improving/revising policies and procedures in the area to include more stringent engineering or administrative controls.
- Purchasing and utilizing additional PPE.
- All parties involved in the investigation will be notified and follow up information will be provided as it becomes available
- If no cause can be found for the issue and there are no measurements that indicate a hazardous exposure, the persons that filed the complaint shall keep a log of dates/times the issue occurs if it continues to be a problem and call EHS as necessary
- If corrective action has been taken, follow up evaluations will be conducted to make sure the actions were effective and the problem has been mitigated.

#### **4. Prevention for Poor Indoor Air Quality:**

- The following steps will be taken to attempt to prevent poor indoor air quality in all facilities:
  - Review of older records of indoor air quality complaints.
  - Ensure up-to-date manufacturers' operating instructions and maintenance records for HVAC system components have been reviewed and filed.
  - Make sure up-to-date schedules and procedures for facility operations and maintenance have been reviewed and filed.
  - Guarantee HVAC "as built" blueprints have been updated to indicate current HVAC configuration and filed.
  - Drawings of tenant build-out and interior building renovations should be updated and information on major space use changes (e.g., office space to kitchen or laboratory, significant increases or decreases in occupant density) have been updated and filed.
  - Ensuring the HVAC system was designed to deliver a specific CFM of outside air which translates into the appropriate CFM of outside air per occupant.
  - A review of occupant thermal comfort complaints and indoor temperature and relative humidity readings indicates that current peak heating and cooling loads do not exceed HVAC system capacity.
  - Information on pressure relationships between areas and/or zones within the building have been examined, updated, and filed.
  - Safety Data Sheets (SDS) for products used in the building are requested from suppliers and kept on file.
- A building walkthrough inspection has been conducted, including both occupied areas and mechanical rooms. During the walkthrough, a pollutant/source inventory has been completed and the IAQ problem indicators have been checked for and noted on a floor plan or comparable drawing, including:
  - Odors
  - Dirty or unsanitary conditions
  - Visible fungal growth or moldy odors
  - Evident moisture in inappropriate locations (e.g., moisture on walls, floors, etc)
  - Staining or discoloration of building material(s) or "Smoke damage"
  - Presence of hazardous substances

- Potential for soil gas entry (e.g., cracks or holes in building surfaces)
- Unusual noises from light fixtures or equipment
- Poorly-maintained filters
- Uneven temperatures
- Overcrowding
- Personal air cleaners (e.g., ozone generators, portable filtration units) or fans
- Inadequate ventilation
- Inadequate exhaust air flow
- Blocked vents
- Other conditions that could impact IAQ, especially risk factors that need regular inspection to prevent IAQ problems from occurring (e.g., drain pans that do not fully drain).
- The condition and operations of the HVAC system have been inspected, including:
  - Components that need to be repaired, adjusted, cleaned, or replaced have been and work orders prepared.
  - Actual control settings and operating schedules for each air handling unit have been recorded and filed, and checked against the design intent.
  - Areas with significant sources of contaminants (e.g., copy rooms, food service areas, printing/photographic areas) are provided with adequate exhaust. Other sources are moved as close to exhaust as possible.
  - Operating schedules for HVAC equipment, ensuring that the HVAC system is operating during significant occupancy periods, have been written and are updated as needed.
  - The HVAC operating schedule provides for an adequate flush of the building, with as much outside air as is feasible, prior to occupants' arrival.

#### **5. HVAC Preventative Maintenance:**

- A preventive maintenance plan that includes equipment maintenance schedules has been written or computerized and is followed and updated as needed.
- A preventive maintenance plan or contract includes at least the following maintenance:
  - Outside air intakes (inspected for nearby sources of contaminants)
  - Air distribution dampers (cleared of obstruction and operating properly)
  - Air filters (pressure drops monitored, replacement or cleaning performed)
  - Drain pans (inspected and cleaned to ensure proper drainage)
  - Heating and cooling coils (inspected and cleaned)
  - Interior of air handling units (inspected and cleaned, as warranted)
  - Fan motor and belts (inspected)
  - Air humidification and controls (inspected and regularly cleaned)
  - Cooling tower (inspected, cleaned, and water treated according to schedule)
  - Air distribution pathways and VAV boxes (inspected and cleaned as needed).
- The preventive maintenance plan and operations manuals are updated when equipment is added, removed, or replaced.

#### **6. Housekeeping:**

- All housekeeping equipment and products used in the building are known to EHS.
- The products used in this building that may produce strong odors, are potential irritants, or may have

other IAQ impacts have been determined and, where possible, have been replaced by products without such impacts.

- Housekeeping procedures that detail proper use, storage, and purchase of cleaning materials have been written and are updated as needed.
- The housekeeping staff or contractors have been educated about the IAQ implications, appropriate use, and application of the following to improve IAQ:
  - Proper cleaning methods
  - Cleaning schedules
  - Purchasing low irritant chemicals
  - Proper materials storage and use of chemicals.
  - Proper trash disposal.

#### **7. Procedures for unscheduled maintenance events**

- Unscheduled maintenance events (e.g., equipment failure) have been written and communicated to building staff. They include:
  - Building maintenance personnel immediately tell EHS that a maintenance event has occurred.
  - Notification to occupants/tenants is provided in a timely manner, addressing how quality is being protected and necessary remedial action is taken.
  - When new products are purchased, information on potential indoor air contaminant emissions is requested from product suppliers.
  - When the services of architects, engineers, contractors, and other professionals are used, IAQ concerns, such as special exhaust needs, are discussed.

#### **8. Remodeling and Renovation:**

- Special procedures to minimize the generation and migration of contaminants or odors to occupied areas of the building are used (or required of contractors). The special procedures used in this building are:
  - The EHS Director reviews designs and construction activities for all proposed remodeling and renovation activities prior to their initiation
  - Work is scheduled during periods of minimum occupancy
  - Ventilation is provided in order to isolate work areas
  - Lower-emitting work processes are used (e.g., wet-sanding dry wall)
  - Specialized cleaning procedures are used (e.g., use of HEPA vacuums)
  - Filters are changed more frequently, especially after work is completed
  - Emissions from new furnishings are minimized (e.g., buying lower-emitting products, airing out furnishings before installation, increased amount and duration of after installation)
  - Ventilation and distribution equipment are protected.
  - When painting, occupants' exposure to paint vapors is minimized by using low-emitting products, scheduling work during periods of minimum occupancy, or increasing ventilation.
  - Tenants or occupants are notified in advance of major renovation, remodeling, maintenance or pest control activities.

#### **9. Pest Control:**

- Integrated Pest Management procedures are used to the extent possible:
  - The pest control products being used in the building are known.

- Either by written procedures or contract language, it is ensured that all people who use pest control products read and follow all label directions for proper use, mixing, storage and disposal.
- Non-chemical pest control strategies are used where possible.
- The safest available pest control products that meet the building's needs are reviewed with pest control contractor.

**10. Shipping or Receiving:**

- Vehicle exhaust has been prevented from entering the building (including through air intakes and building openings) by installing barriers to airflow from loading dock areas (e.g., doors, curtains, etc.) and using pressurization.

**19. Smoking:**

- Smoking is prohibited in all campus buildings, including tenant occupied space. Smoking areas with disposal buckets are available around the campus. Tenants or occupants are routinely informed about building conditions and policies that may impact IAQ (e.g., smoking policy clarifications).

**20. Mold**

- Dampness results from water incursion either from internal sources such as leaking pipes or external sources such as rainwater. Dampness becomes a problem when various materials in buildings like rugs, walls and ceiling tile become wet for extended periods of time.
- Excessive moisture in the air, such as high relative humidity that is not properly controlled with air conditioning, can also lead to excessive dampness.
- Dampness provides the moisture that supports the growth of bacteria, fungi, mold, and insects. In the presence of damp building materials, the source of water incursion is often obvious when there is physical evidence of leaks in the roof or windows or a pipe that has burst.
- Dampness problems can also be less obvious when the affected materials and water source are hidden from view such as wet insulation within a ceiling or wall. Excess moisture is generally the cause of indoor mold growth.
- Molds reproduce by releasing tiny spores that float through the air until landing in other locations. When they settle on wet or moist surfaces, the spores can form new mold colonies. Moderate temperatures and available nutrient sources make most office buildings ideal for mold growth.
- Testing for Mold:
  - The CDC does not recommend routine sampling for molds.
  - Generally, it is not necessary to identify the species of mold growing in a building. Measurements of mold in air are not reliable or representative.
  - If mold is observed or smelled, there is a potential health risk; therefore, no matter what type of mold is present, you should arrange for its removal. Furthermore, sampling for mold can be expensive, and standards for judging what is or what is not an acceptable or tolerable quantity of mold is have not been established.
- Possible medical issues with mold:
  - Allergies: Allergic responses like those to pollen or animal dander are the most common types of health problems related to mold. Typical symptoms include sneezing; irritation of the nose, mouth, or throat; nasal stuffiness and runny nose; and red, itchy or watery eyes. Inhaling or touching mold or mold spores can cause a person who was not previously allergic to mold to become allergic to mold. For people with known allergies, molds can trigger asthma symptoms such as shortness of breath,

wheezing, or cough. Irritation can also occur in non-allergenic (non-sensitized) people.

- Hypersensitivity pneumonitis: (HP) is a kind of lung inflammation that occurs in persons who develop immune system sensitization (similar to an allergy) to inhaled organic dust. It can be mistaken for pneumonia, but it does not get better with antibiotics for infection. Symptoms of HP can vary. Some persons have shortness of breath, cough, muscle aches, chills, fever, night sweats, and profound fatigue. These symptoms usually first appear 2 to 9 hours after exposure and last for 1 to 3 days. Other affected persons have progressive shortness of breath and cough, as well as weight loss. Work-relatedness may only become apparent over long holidays if symptoms resolve and then recur on return to work. With continued exposure, the persistent lung inflammation of both kinds of symptoms can lead to scarring and permanent damage. The slow progression of symptoms and the persistence of symptoms away from work may result in delayed recognition of work-related lung disease by both workers and physicians.
- Asthma: is a form of lung disease in which the airways develop inflammation and bronchospasm (reversible narrowing) in response to sensitizing or irritating exposure. Affected individuals can experience episodes of shortness of breath, cough, chest tightness, and wheezing. These symptoms occur after exposure to nonspecific irritating substances in the air or after exposure to substances to which an individual is allergic. Early diagnosis and removal from the impacted damp office environment can cure asthma caused by workplace exposures.

- Procedures for reporting a suspected mold problem:

- Report concerns immediately to your direct supervisor and the EHS department.
- If you are high risk for mold sensitivity issues, see your doctor for proper diagnosis and treatment.
- Ask your doctor whether you should be medically restricted from the affected environment.

- Employer's procedures for after a mold complaint is filed:

- Evaluate the work area for evidence of mold and dampness.
- Repair leaks and remediate water damaged materials.
- Communicate with workers about areas of the building with evidence of mold or moisture damage and provide the status of remediation plans.
- Arrange for relocation of workers whose doctors restrict them from the implicated work environments.
- Advise all employees with mold sensitivities or health issues to seek a medical evaluation.

- Preventing Mold:

- The UNE Facilities department will try to locate any mold issues as soon as possible, but the building occupants will usually be the first ones to identify the problem since they inhabit the building daily. UNE employees and building occupants should notify Facilities and EHS immediately if they have dampness, moisture, leaks, or signs of water damage in their area. The following will be done to ensure a mold incident does not occur or is less likely to occur:
  - Fix leaky plumbing and leaks in the building envelope as soon as possible.
  - Watch for condensation and wet spots. Fix source(s) of moisture problem(s) as soon as possible.
  - Prevent moisture due to condensation by increasing surface temperature or reducing the moisture level in air (humidity). To increase surface temperature, insulate or increase air circulation. To reduce the moisture level in air, repair leaks, increase ventilation (if outside air is cold and dry), or dehumidify (if outdoor air is warm and humid).
  - Keep heating, ventilation, and air conditioning (HVAC) drip pans clean, flowing properly, and unobstructed.

- Vent moisture-generating appliances, such as dryers, to the outside where possible.
- Maintain low indoor humidity, below 60% relative humidity (RH), ideally 30 – 50%, if possible.
- Perform regular building/HVAC inspections and maintenance as scheduled.
- Clean and dry wet or damp spots within 48 hours.
- Don't let foundations stay wet. Provide drainage and slope the ground away from the foundation.
- **Mold Remediation:**
  - UNE will contact an outside contractor for all mold remediation activities so that no employee will be subjected to the mold exposure after it is reported. The following will be completed by the contractor before occupants can return to the space:
    - Fix the water or humidity problem. Complete and carry out repair plan if appropriate.
    - Revise and/or carry out maintenance plan if necessary.
    - Revise remediation plan, as necessary, if more damage is discovered during remediation.
    - Continue to communicate with Facilities, EHS, and building occupants, as appropriate to the situation. Be sure to address all concerns.
    - Completely clean up mold and dry water-damaged areas. Select appropriate cleaning and drying methods for damaged/contaminated materials.
    - Carefully contain and remove moldy building materials. Use appropriate Personal Protective Equipment (PPE).

**SECTION 23.5**

**TRAINING**

**1. Training:**

There is no required training for IAQ issues. Employees should be made aware of the existence of this program and how to report an IAQ problem upon hire.

**SECTION 24.0**

**PROCEDURES FOR SAFETY OPERATIONS OF GOLF CARTS**

**1. Introduction**

- The information and instructions included in this document will enable operators of golf carts to avoid situations that may compromise their safety or the safety of those in the vicinity of the vehicle, and avoid damaging the vehicle or any of its accessories. These policies will act as the guidelines for all UNE employees or student workers who must:
  - use golf carts for work purposes
  - provide service to unlicensed vehicles

**SECTION 24.1**

**RESPONSIBILITIES**

**1. Environmental Health and Safety**

- Provide practical driving test as necessary
- Provide training for all personnel whose job requires the use of a golf cart
- Provide for periodic review of program

**2. Department Supervisor**

- Ensure that all affected employees complete the required training.
- Maintain compliance with this policy and address enforcement issues through the use of the UNE Employee Handbook and/or UNE Faculty Handbook and/or UNE Student Handbook.

### 3. Employee/Student Operators

- Complete golf cart Safety training, upon assignment. This training is a one-time training.
- Operate golf carts according to the policies set forth in this plan
- Ensure that golf carts are brought to the Mechanic Shop on Fridays in the summer for weekly fluid checks.

### 4. Maintenance Mechanic

- Provide necessary maintenance to golf carts per manufacturer's specifications
- Set the UNE golf carts so that the maximum speed is 15 mph (see #6 below)
- Check fluid levels, back up alarm function, head lights, taillights, and flashing light(s) weekly, when the carts are brought to the garage

### 5. Facilities Tracking

- Maintain employee training records
- Logging and managing the daily use of golf carts

## SECTION 24.2

## GOLF CART POLICIES AND PROCEDURES

### 1. Purpose:

- The purpose of this document it is to ensure that all Golf Cart operators are aware of the operating and safety features of vehicles of this type, prevent accidents, and minimize damage or injuries. Operating a UNE golf cart requires your full attention in order to prevent an accident.

### 2. General rules of operation:

- Use of a cell phone or other electronic device while operating a UNE Golf cart is strictly prohibited. If the operator of the golf cart needs to communicate with a cell phone or electronic device, the operator must stop the golf cart in a safe location and remain stopped until the communication has been terminated.
- Golf carts are to be driven only on the sidewalks. If you need to cross a roadway, cross only at a designated crosswalk. Under no other circumstances can a golf cart be driven on a public roadway (i.e. Route 9 or Hills Beach Rd.).
  - When crossing Rte. 9 from the access road you must use the crosswalk and also activate the pedestrian crossing light. Alternative to this would be to use the tunnel under Rte. 9.
  - Driving on the Access road between Facilities and Hills Beach Rd. is permissible as long as the driver travels in the same direction as traffic, obeys all road signs and stays to the extreme right edge of the road.
- On the campus of the University of New England, the pedestrian always has the right-of-way Operators of golf carts will permit this right-of-way. When approaching a pedestrian from behind, slow down and wait for the pedestrian to wave you past them, stop the unit when approaching pedestrians head-on until they pass.
- No golf cart is to be operated with more passengers than seating is provided.
- Drivers can only operate golf carts for which they have received training (i.e. those that have received training to operate two passenger carts are not permitted to operate the eight passenger carts).
- All occupants in the golf cart shall keep hands, arms, legs and feet within the confines of the golf cart at all times when the cart is in motion.
- Do not operate golf cart until all passengers are seated.
- Before proceeding to back up make sure there is no person or obstructions behind the cart.
- Stop the golf cart if passenger(s) behavior affects our ability to operate the golf cart safely.
- Never shift gears (forward & reverse) while the vehicle is in motion.
- A golf cart shall be operated at a speed equivalent to a well-paced walk and *no faster than fifteen-mph.*



This maximum speed may be subject to the terrain over which it is being driven, the weather conditions, and the total weight of the golf cart and passengers and any equipment being carried.

- Avoid operating a golf cart on landscaped lawns.
- When operating a golf cart on an intercollegiate athletics playing field, all driving must occur on the outside of the playing surface, under no circumstances should a cart be used to cross a field.
- Reduce speed to compensate for inclines, pedestrians, and weather conditions.
- Maintain adequate distance between vehicles and pedestrian.
- Approach sharp or blind corners with caution at a reduced speed.
- Blind corners include the Decary entrance and Sienna Hall facing Alford
- Sharp corners include the back side of Stella Maris
- Use extreme care at building entrances and upon entering/exiting enclosed areas.
- Never leave the keys in the golf cart when unattended.
- When the golf cart is not in use the operator must place the golf cart control lever in the park or neutral position, remove and secure the key and set the parking pedal brake.
- If the golf cart is parked outdoors overnight, it must be secured with a chain and lock or other equivalent locking mechanism.
- Parked golf carts should never obstruct access to a building. Adequate space for wheelchairs, catering carts, facilities carts and emergency egress by a crowd, must be maintained.
- All accidents must be reported, immediately, to the supervisor. If the supervisor is not available, report the accident to the Department of Safety and Security.
- Golf carts are to stay within the confines of UNE property at all times.
- Any person who operates a UNE owned golf cart must possess a valid driver's license and received the required golf cart training.

## **2. Equipment and Safety Checklist**

- Before operating the golf cart, the operator will:
  - Check for tire condition and inflation (visual).
  - Check for any indication of fluid (oil, battery fluid, etc.) leaks at the rear of the golf cart.
  - Check brakes for proper operation.
  - Check horn for proper operation.
  - Check both mirrors (8 passenger golf cart only). Make sure they are present and not damaged.
- If the golf cart is in need of repair or maintenance, it should not be driven. Notify Facility Maintenance personnel immediately. An alternative golf cart will be assigned if available.

## **3. All-Terrain Vehicle Laws and Regulations**

- The UNE golf carts are registered with the State of Maine as All-Terrain Vehicles (ATV) and as such are subject to Maine's ATV laws. Violations of Maine's ATV laws can be applied to your motor vehicle license. Any operator stopped by a law enforcement official can be cited for violating ATV laws and fined anywhere from \$100 to \$1000 depending on the violation. In addition the operator can lose their right to operate an ATV in Maine.
- Violations can include:
  - Failure to stop for a law enforcement officer
  - Attempt to elude a law enforcement officer
  - Operating under the influence
  - Reckless operation of an ATV
  - Operating to endanger

**1. Training**

- Golf cart safety training shall include, but not be limited to, the following information:
  - The policies contained in this program.
  - An introduction to the vehicle's controls and their function.
  - Inspection procedure to follow prior to starting the vehicle.
  - Proper conduct for driving the vehicle.
  - Steps to take when leaving vehicles unattended.
  - A practical driving test around the UNE campus to familiarize the driver to the campus.

**\*\*Below are the necessary forms for operating a golf cart at UNE \*\***

# Disclosure and Consent to Procure Motor Vehicle Report for the Use of University of New England Vehicles

The undersigned hereby authorizes the University of New England to obtain copies of a motor vehicle report, pertaining to me for the purposes for use of University vehicles. The motor vehicle report obtained on me will provide information in rating and/or underwriting insurance for which the University of New England may apply, and renewal thereof.

---

Signature of Operator/ Employee / Student

Date

---

Print Name

---

Telephone Number

---

Date of Birth

---

Driver's License Number

## Staff Clearance for driving a UNE Golf Cart

\_\_\_\_\_ (*employee name*) has completed the required Golf Cart Safety training and is authorized to operate a UNE owned golf cart identified below at the University of New England.

\_\_\_\_\_ 2 & 4 Passengers

\_\_\_\_\_ 8 Passengers

\_\_\_\_\_  
Employee PRN Number

\_\_\_\_\_  
Trainers Signature

\_\_\_\_\_  
Date

**Please forward this form to Facilities Management on the Biddeford Campus**

## UNE GOLF CART USAGE FORM

1	2	3	4	5
151 CART	152 CART			

(please fill-in ALL information below)

Name of Driver:	Number of Passengers:
Reason for use:	Destination:
	Date of Trip:
	Signature:

### REMINDER

**\*SMOKING, EATING, DRINKING AND USE OF CELL PHONES ARE PROHIBITED IN UNE VEHICLES**

\*Vehicles must be left in the Facilities Management Parking Lot when returned

\*Personal items and trash must be removed

\*Submit vehicle key along with this form to the Facilities Management office upon return.

\*Office hours are 8am-4:00pm M-F. After hours keys and the form can be deposited in the key box at the Facilities Management office.

\*Alcohol or drug use is STRICTLY PROHIBITED

### IN CASE OF MECHANICAL PROBLEMS:

1. **CALL** UNE Facilities Management Department at 207-602-2368

### VEHICLE CONDITION CHECK LIST

Interior:
Exterior:
Lights:
Vehicle Operation Comments:

**APPENDIX A**

**Confined Space Entry Permit**

<b>Confined Space to be Entered:</b>		<b>Dept Applying for permit:</b>	
<b>Employee or Contractor Entry:</b>		<b>Date of Entry:</b>	
<b>Supervisor in Charge:</b>		<b>Supervisor Phone #</b>	
<b>Names of Entrants:</b>		<b>Names of Attendants:</b>	
<b>Description of Work to be Done:</b>		<b>Purpose of Entry:</b>	
<b>Duration of Occupancy:</b>		<b>Communication Method:</b>	

*\*\*Permit valid for up to 8 hours only. All copies of permit will remain at job site until job is completed\*\**

<b>Potential Hazards:</b>	<b>Measures used to isolate the permit confined space:</b>

<b>Requirements Completed:</b>	<b>Completed (yes/no)</b>	<b>Date</b>
- Lock-Out/De-Energize/Tag-Out		
-Line(s) Broken-Capped-Blanked		
-Purge-Flush and Vent		
-Full Body Harness w/ "D" ring		
-Emergency Escape Retrieval Equipment		
-Lifelines		
-Secure Area (Post and Flag)		
-Breathing Apparatus		
-Standby Safety Personnel		
-Fire Extinguishers		
-Lighting (Explosion Proof)		
-Protective Clothing		
-Respirator(s)/ Air Purifying		

(For items that do not apply, enter N/A in the "Completed" column)

<b>Acceptable Entry Conditions:</b>

Item Tested	Result/Level	Date/Initials of Tester

Emergency Contacts:	Contact Phone Numbers:
Police/Ambulance/Fire	911
UNE EHS	Ron Souza (x-2488) Peter Nagle (x-2791) Jessica Tyre (x-2046)
UNE Security	Biddeford (x-2298) Portland (207-468-0902)

Equipment/PPE being Used:	Other Permits being issued ex) hot work permit

I have read the above confined space entry permit and agree to comply with all rules and regulations pertaining to the UNE Confined Space Entry Program.

Supervisor Signature: \_\_\_\_\_ Date \_\_\_\_\_

Entrant Signatures: \_\_\_\_\_ Date \_\_\_\_\_

Attendant Signatures: \_\_\_\_\_ Date \_\_\_\_\_

EHS Signature: \_\_\_\_\_ Date \_\_\_\_\_

**Appendix B**  
**Respirator Fit Test Record**

A. Employee: \_\_\_\_\_ Date: \_\_\_\_\_  
Employee #: \_\_\_\_\_ Job Title/Description: \_\_\_\_\_

B. Employer: University of New England  
Location/Address: 11 Hills Beach Rd.  
Biddeford, ME 04005

C. Respirator Selected: \_\_\_\_\_  
Manufacturer: \_\_\_\_\_  
Model (circle one): \_\_\_\_\_

D. Conditions Which Could Affect Respirator Fit:  
None: \_\_\_\_\_ Clean Shaven: \_\_\_\_\_  
Facial Scars: \_\_\_\_\_ 1-2 Days Beard Growth: \_\_\_\_\_  
Dentures (absent): \_\_\_\_\_ 2+ Days Beard Growth: \_\_\_\_\_  
Glasses: \_\_\_\_\_ Moustache: \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_

E. Fit Checks  
Negative Pressure: Pass  Fail  Not Done   
Positive Pressure: Pass  Fail  Not Done

F. Fit Testing  
Quantitative: Fit Factor \_\_\_\_\_

Qualitative: Iso Amyl Acetate – Pass  Fail  Saccharin – Pass  Fail  Bitrex -  
Pass  Fail  Smoke – Pass  Fail

Comments: \_\_\_\_\_  
\_\_\_\_\_

G. Employee Acknowledgement of Test Results

Employee Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Test Conducted By: \_\_\_\_\_ Date: \_\_\_\_\_



**Appendix C**  
**Example of: Medical Evaluation Questionnaire**  
(OSHA29CFR1910.134 App C)

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. Today's date: \_\_\_\_\_
2. Your name: \_\_\_\_\_
3. Your age (to nearest year): \_\_\_\_\_ 4. Sex (circle one): Male/Female
5. Your height: \_\_\_\_\_ ft. \_\_\_\_\_ in. 6. Your weight: \_\_\_\_\_ lbs.
7. Your job title: \_\_\_\_\_
8. Phone Number: \_\_\_\_\_
9. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/No
11. Check the type of respirator you will use (you can check more than one category):
  - a. \_\_\_\_\_ N, R, or P disposable respirator (filter-mask, non-cartridge type only).
  - b. \_\_\_\_\_ Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).
12. Have you worn a respirator (circle one): Yes/No  
If "yes," what type(s): \_\_\_\_\_  
\_\_\_\_\_

Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1. Do you *currently* smoke tobacco, or have you smoked tobacco in the last month: Yes/No
2. Have you *ever had* any of the following conditions?
  - a. Seizures: Yes/No
  - b. Diabetes (sugar disease): Yes/No
  - c. Allergic reactions that interfere with your breathing: Yes/No
  - d. Claustrophobia (fear of closed-in places): Yes/No
  - e. Trouble smelling odors: Yes/No
3. Have you *ever had* any of the following pulmonary or lung problems?
  - a. Asbestosis: Yes/No
  - g. Silicosis: Yes/No

- b. Asthma: Yes/No
  - c. Chronic bronchitis: Yes/No
  - d. Emphysema: Yes/No
  - e. Pneumonia: Yes/No
  - f. Tuberculosis: Yes/No
  - h. Pneumothorax (collapsed lung): Yes/No
  - i. Lung cancer: Yes/No
  - j. Broken ribs: Yes/No
  - k. Any chest injuries or surgeries: Yes/No
  - l. Any other lung problem that you've been told about:
- 

4. Do you *currently* have any of the following symptoms of pulmonary or lung illness?

- a. Shortness of breath: Yes/No
- b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes/No
- c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes/No
- d. Have to stop for breath when walking at your own pace on level ground: Yes/No
- e. Shortness of breath when washing or dressing yourself: Yes/No
- f. Shortness of breath that interferes with your job: Yes/No
- g. Coughing that produces phlegm (thick sputum): Yes/No
- h. Coughing that wakes you early in the morning: Yes/No
- i. Coughing that occurs mostly when you are lying down: Yes/No
- j. Coughing up blood in the last month: Yes/No
- k. Wheezing: Yes/No
- l. Wheezing that interferes with your job: Yes/No
- m. Chest pain when you breathe deeply: Yes/No
- n. Any other symptoms that you think may be related to lung problems: Yes/No

5. Have you *ever had* any of the following cardiovascular or heart problems?

- a. Heart attack: Yes/No
- b. Stroke: Yes/No
- c. Angina: Yes/No
- d. Heart failure: Yes/No
- e. Swelling in your legs or feet (not caused by walking): Yes/No
- f. Heart arrhythmia (heart beating irregularly): Yes/No
- g. High blood pressure: Yes/No
- h. Any other heart problem that you've been told about: Yes/No

6. Have you *ever had* any of the following cardiovascular or heart symptoms?

- a. Frequent pain or tightness in your chest: Yes/No
- b. Pain or tightness in your chest during physical activity: Yes/No
- c. Pain or tightness in your chest that interferes with your job: Yes/No
- d. In the past two years, have you noticed your heart skipping or missing a beat: Yes/No
- e. Heartburn or indigestion that is not related to eating: Yes/No
- d. Any other symptoms that you think may be related to heart or circulation problems: Yes/No

7. Do you *currently* take medication for any of the following problems?

- a. Breathing or lung problems: Yes/No
- b. Heart trouble: Yes/No
- c. Blood pressure: Yes/No
- d. Seizures (fits): Yes/No

8. If you've used a respirator, have you *ever had* any of the following problems? (If you've never used a respirator, check the following space and go to question 9:)

- a. Eye irritation: Yes/No
- b. Skin allergies or rashes: Yes/No
- c. Anxiety: Yes/No
- d. General weakness or fatigue: Yes/No
- e. Any other problem that interferes with your use of a respirator: Yes/No

9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes/No

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you *ever lost* vision in either eye (temporarily or permanently): Yes/No

11. Do you *currently* have any of the following vision problems?

- a. Wear contact lenses: Yes/No
- b. Wear glasses: Yes/No
- c. Color blind: Yes/No
- d. Any other eye or vision problem: Yes/No

12. Have you *ever had* an injury to your ears, including a broken ear drum: Yes/No

13. Do you *currently* have any of the following hearing problems?

- a. Difficulty hearing: Yes/No
- b. Wear a hearing aid: Yes/No
- c. Any other hearing or ear problem: Yes/No

14. Have you *ever had* a back injury: Yes/No

15. Do you *currently* have any of the following musculoskeletal problems?

- a. Weakness in any of your arms, hands, legs, or feet: Yes/No
- b. Back pain: Yes/No
- c. Difficulty fully moving your arms and legs: Yes/No
- d. Pain or stiffness when you lean forward or backward at the waist: Yes/No
- e. Difficulty fully moving your head up or down: Yes/No
- f. Difficulty fully moving your head side to side: Yes/No
- g. Difficulty bending at your knees: Yes/No
- h. Difficulty squatting to the ground: Yes/No
- i. Climbing a flight of stairs or a ladder carrying more than 25 lbs: Yes/No
- j. Any other muscle or skeletal problem that interferes with using a respirator: Yes/No

Part B Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: Yes/No

If "yes," name the chemicals if you know them: \_\_\_\_\_

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---

3. Have you ever worked with any of the materials, or under any of the conditions, listed below:

- a. Asbestos: Yes/No
- b. Silica (e.g., in sandblasting): Yes/No
- c. Tungsten/cobalt (e.g., grinding or welding this material): Yes/No
- d. Beryllium: Yes/No
- e. Aluminum: Yes/No
- f. Coal (for example, mining): Yes/No
- g. Iron: Yes/No
- h. Tin: Yes/No
- i. Dusty environments: Yes/No
- j. Any other hazardous exposures: Yes/No

If "yes," describe these exposures: \_\_\_\_\_

---

---

4. List any second jobs or side businesses you have: \_\_\_\_\_

---

5. List your previous occupations: \_\_\_\_\_

---

6. List your current and previous hobbies: \_\_\_\_\_  
\_\_\_\_\_

7. Have you been in the military services? Yes/No

If "yes," were you exposed to biological or chemical agents (either in training or combat): Yes/No

8. Have you ever worked on a HAZMAT team? Yes/No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): Yes/No

If "yes," name the medications if you know them: \_\_\_\_\_

10. Will you be using any of the following items with your respirator(s)?

a. HEPA Filters: Yes/No

b. Canisters (for example, gas masks): Yes/No

c. Cartridges: Yes/No

11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:

a. Escape only (no rescue): Yes/No

e. 2 to 4 hours per day: Yes/No

b. Emergency rescue only: Yes/No

f. Over 4 hours per day: Yes/No

c. Less than 5 hours *per week*: Yes/No

d. Less than 2 hours *per day*: Yes/No

12. During the period you are using the respirator(s), is your work effort:

a. *Light* (less than 200 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: \_\_\_\_\_ hrs. \_\_\_\_\_ mins.

Examples of a light work effort are *sitting* while writing, typing, drafting, or performing light assembly work; or *standing* while operating a drill press (1-3 lbs.) or controlling machines.

b. *Moderate* (200 to 350 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: \_\_\_\_\_ hrs. \_\_\_\_\_ mins.

Examples of moderate work effort are *sitting* while nailing or filing; *driving* a truck or bus in urban traffic; *standing* while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; *walking* on a level surface about 2 mph or down a 5-degree grade about 3 mph; or *pushing* a wheelbarrow with a heavy load (about 100 lbs.) on a level surface. c. *Heavy* (above 350 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: \_\_\_\_\_ hrs. \_\_\_\_\_ mins.

Examples of heavy work are *lifting* a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; *shoveling*; *standing* while bricklaying or chipping castings; *walking* up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator: Yes/No

If "yes," describe this protective clothing and/or equipment: \_\_\_\_\_

\_\_\_\_\_

14. Will you be working under hot conditions (temperature exceeding 77 deg. F): Yes/No

15. Will you be working under humid conditions: Yes/No

16. Describe the work you'll be doing while you're using your respirator(s):

\_\_\_\_\_  
\_\_\_\_\_

17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases):

\_\_\_\_\_  
\_\_\_\_\_

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):

Name of the first toxic substance: \_\_\_\_\_

Estimated maximum exposure level per shift: \_\_\_\_\_

Duration of exposure per shift: \_\_\_\_\_

Name of the second toxic substance: \_\_\_\_\_

Estimated maximum exposure level per shift: \_\_\_\_\_

Duration of exposure per shift: \_\_\_\_\_

Name of the third toxic substance: \_\_\_\_\_

Estimated maximum exposure level per shift: \_\_\_\_\_

Duration of exposure per shift: \_\_\_\_\_

The name of any other toxic substances that you'll be exposed to while using your respirator:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security):

\_\_\_\_\_

## Appendix D

1910.134 App B-2

### Procedures for Cleaning Respirators

- A. Remove filters, cartridges, or canisters. Disassemble face pieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
- B. Wash components in warm (43 deg. C [110 deg. F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
- C. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain.
- D. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
1. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg. C (110 deg. F); or,
  2. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43 deg. C (110 deg. F); or,
  3. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
- E. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on face pieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
- F. Components should be hand-dried with a clean lint-free cloth or air-dried.
- G. Reassemble face piece, replacing filters, cartridges, and canisters where necessary.
- H. Test the respirator to ensure that all components work properly

## APPENDIX E

### TERMS AND DEFINITIONS FOR RESPIRATORY PROTECTION

**Air-purifying respirator** means a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

**Assigned protection factor (APF)** means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section.

**Atmosphere-supplying respirator** means a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

**Canister or cartridge** means a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

**Demand respirator** means an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.

**Emergency situation** means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

**Employee exposure** means exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

**End-of-service-life indicator (ESLI)** means a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

**Escape-only respirator** means a respirator intended to be used only for emergency exit.

**Filter or air purifying element** means a component used in respirators to remove solid or liquid aerosols from the inspired air.

**Filtering facepiece (dust mask)** means a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

**Fit factor** means a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

**Fit test** means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)

**Helmet** means a rigid respiratory inlet covering that also provides head protection against impact and penetration.

**High efficiency particulate air (HEPA) filter** means a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

**Hood** means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

**Immediately dangerous to life or health (IDLH)** means an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

**Interior structural firefighting** means the physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage. (See 29 CFR 1910.155)

**Loose-fitting facepiece** means a respiratory inlet covering that is designed to form a partial seal with the face.

**Maximum use concentration (MUC)** means the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator, and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the assigned



protection factor specified for a respirator by the required OSHA permissible exposure limit, short-term exposure limit, or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC on the basis of relevant available information and informed professional judgment.

**Negative pressure respirator (tight fitting)** means a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

**Oxygen deficient atmosphere** means an atmosphere with an oxygen content below 19.5% by volume.

**Physician or other licensed health care professional (PLHCP)** means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by paragraph (e) of this section.

**Positive pressure respirator** means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

**Powered air-purifying respirator (PAPR)** means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

**Pressure demand respirator** means a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

**Qualitative fit test (QLFT)** means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

**Quantitative fit test (QNFT)** means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

**Respiratory inlet covering** means that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.

**Self-contained breathing apparatus (SCBA)** means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

**Service life** means the period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.

**Supplied-air respirator (SAR) or airline respirator** means an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

**This section** means this respiratory protection standard.

**Tight-fitting facepiece** means a respiratory inlet covering that forms a complete seal with the face.

**User seal check** means an action conducted by the respirator user to determine if the respirator is properly seated to the face.

## Appendix F: Major Types of Respirators and their Assigned Protection Factors (APF's):

*Air-purifying respirators*, which remove contaminants from the air:



**Half mask/Dust mask**

APF=10

*Needs to be fit tested*



**Half mask (Elastomeric)**

APF=10

*Needs to be fit tested*



**Full facepiece (Elastomeric)**

APF=50

*Needs to be fit tested*



**Hood Powered Air-Purifying  
Respirator (PAPR)**

APF= 25



**Atmosphere-supplying respirators**, which provide clean air from an uncontaminated source.



**Full Facepiece Supplied-Air Respirator (SAR)  
with an auxiliary Escape Bottle**

APF=1,000

APF = 10,000 (if used in “escape” mode)

*Needs to be fit tested*



**Full Facepiece Self-Contained**

**Breathing Apparatus (SCBA)**

Pressure demand mode is APF=10,000

*Needs to be fit tested*



**Full Facepiece Abrasive Blasting  
Continuous Flow**

APF=1,000

*Needs to be fit tested*

UNIVERSITY OF NEW ENGLAND

ACCIDENT REPORT

Employee Name \_\_\_\_\_ PRN # 910

Home Address \_\_\_\_\_ Home Telephone # \_\_\_\_\_

Job Title/Position \_\_\_\_\_

Supervisor Name \_\_\_\_\_

Regular Work Schedule (days/times) \_\_\_\_\_

\*Please print clearly and send report IMMEDIATELY after an accident to:  
Human Resources (Cat Martins)

**EMPLOYEE STATEMENT**

\_\_\_\_\_ was injured at \_\_\_\_\_ on \_\_\_\_\_  
(name) (location) (date)  
at \_\_\_\_\_  
(time)

1. Please describe in full detail how the accident occurred \_\_\_\_\_  
\_\_\_\_\_
2. Time employee began work on day of injury \_\_\_\_\_
3. Name of witness(es), if any, to accident or injury \_\_\_\_\_  
\_\_\_\_\_
4. Please describe injury in detail and include parts of the body affected \_\_\_\_\_  
\_\_\_\_\_
5. What medical treatment did the injured employee receive? \_\_\_\_\_  
\_\_\_\_\_
6. If employee received medical treatment, name and address of provider \_\_\_\_\_  
\_\_\_\_\_
7. Was injured employee taken to the hospital?  
a. YES \_\_\_\_\_ NO \_\_\_\_\_  
b. If yes, how was injured employee transported? \_\_\_\_\_
8. Did employee miss any time from work after returning from medical treatment?  
a. YES \_\_\_\_\_ NO \_\_\_\_\_  
b. If yes, how much time did employee miss, and what is the expected date or time of return? \_\_\_\_\_
9. Will employee be returning to a doctor of other health care provider?  
a. YES \_\_\_\_\_ NO \_\_\_\_\_  
b. If yes, name and address of provider \_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Employee Signature

\_\_\_\_\_  
Date

**HUMAN RESOURCES OFFICE (Cat Martins)**

1. A telephone call concerning this accident was received on \_\_\_\_\_ at \_\_\_\_\_ and  
(date) (time)  
and the person who called is \_\_\_\_\_.
2. This ACCIDENT REPORT was received in the Human Resources Office on \_\_\_\_\_, and  
the time was \_\_\_\_\_.
3. Additional Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Signature/Human Resources

\_\_\_\_\_  
Date

**FOLLOW UP**

**ENVIRONMENTAL HEALTH AND SAFETY OFFICE (Ronnie Souza)**

1. Accident Report received \_\_\_\_\_
2. Was safety equipment used? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. If yes, was the equipment adequate? \_\_\_\_\_  
\_\_\_\_\_
4. **RECOMMENDATIONS**

\_\_\_\_\_  
Signature/Environmental Health & Safety

\_\_\_\_\_  
Date

**Appendix H:  
TEST COUNSELING PROCEDURE HIV/HBV EXPOSURE**

**\*\*Please contact the Assistant Director of Human Resources for all forms regarding the  
UNE Blood Borne Pathogens Program.\*\***

	<b>University of New England APPENDIX-I REQUEST FOR HAZARDOUS, BIO-HAZARDOUS and RADIOACTIVE WASTE REMOVAL</b> [Please print or type]				University of New England Environmental Health & Safety Facilities Management Building - BC x2791 Fax: 602-5911 (EMAIL: pnagle@une.edu)		
Date: _____		Contact Person: _____		Location of Waste: _____			
Dept.: Chem _____		Phone: _____		Bldg. & Room #: _____			
Responsible Faculty/Staff Person: _____		Bldg. & Room #: _____		Campus: _____			
<b>EHS USE ONLY</b>	IDENTIFICATION/DESCRIPTION of HAZ WASTE (Do not submit unknowns)	PHYS. STAT E	NUMBER, SIZE & TYPE OF CONTAINER	VOLUME or WEIGHT in CONTAINER	pH	HAZARDS	
	# _____						
	# _____						
	# _____						
	# _____						
	# _____						
Special Notes or Handling Instructions:							
Certification: "I hereby declare that the identification/description of hazardous waste(s) is accurate and complete to the best of my knowledge. If waste has already been neutralized, detoxified, or recycled, it has been noted as such above."							
SAA Responsible Party Signature:			Date:		(Only one certification is needed)		

<sup>15</sup> I:\Campus Services\ENVS\Environmental Health & Safety\Hazardous Waste pick-up request form

# APPENDIX J

## SAA WASTE STORAGE INSPECTION LOG

### Biddeford Campus

Each day under the appropriate month and week, provide time of inspection and initials of inspector. Placing the date and initials in the box indicates that the inspection criteria are successfully met. Record corrective actions taken below and report actions to the HW Manager.

Building & Room Number:										
Week:	1	2	3	4	5					
Year:	DATE/INITIALS	DATE/INITIALS	DATE/INITIALS	DATE/INITIALS	DATE/INITIALS					
January										
February										
March										
April										
May										
June										
July										
August										
September										
October										
November										
December										
<ul style="list-style-type: none"> <li>• <b>Inspection is required once every 7 days.</b></li> <li>• <b>INSPECTION CRITERIA</b> <ol style="list-style-type: none"> <li>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.</li> <li>b. All containers are closed.</li> <li>c. No containers are leaking, bulging, rusting, or otherwise damaged.</li> <li>d. Containers are compatible with the wastes that are stored in them.</li> <li>e. Incompatible wastes are segregated.</li> <li>f. All Containers are stored in secondary containment and on a firm working surface.</li> <li>g. SAA must be located at the point of generation.</li> <li>h. SAA must be under the control of an operator</li> <li>i. Inspections must be completed weekly</li> <li>j. All full containers must be moved to the Main Accumulation Area within 72 hours.</li> </ol> </li> </ul>										

**Corrective Action** (See Page #2)

Inspector Name (print): \_\_\_\_\_ Inspector Initials: \_\_\_\_\_

Inspector Name (print): \_\_\_\_\_ Inspector Initials: \_\_\_\_\_

Inspector Name (print): \_\_\_\_\_ Inspector Initials: \_\_\_\_\_





APPENDIX K

UNIVERSITY OF NEW ENGLAND

**90-DAY HAZARDOUS WASTE STORAGE AREA CHECKLIST (MAA)**

	Week 1	Week 2	Week 3	Week 4
Month:				
Inspector:				
Date of Inspection:				
Time of Inspection:				
Is the "90-DAY" accumulation start date clearly marked and visible on each container				
Is each container labeled "HAZARDOUS WASTE"				
Is each container free of rust, bulges, dents, and leaks				
Is each container tightly closed except when hazardous waste is being added or removed				
Has each drum been full for 90 days or less				
Is each hazardous waste stored in a compatible DOT container				
Are incompatible hazardous wastes separated				
Are ignitable and reactive hazardous wastes stored at least 50 feet from the facility's property line				
Are hazardous waste containers with a capacity of 10 gallons or more stacked in rows equal to or less than 4 wide and 2 high				
Are there at least 36 inches of aisle space between container rows				
Are containers stored on impervious surface				
Are "Danger -- Unauthorized Personnel Keep Out" and "No Smoking" signs posted				
Does the storage area's secondary containment exceed 20% of the total capacity of all containers and 110% of the capacity of the largest container				
Is the emergency communication device in good working order				
Prior to transport, is each container with a capacity of 110 gallons or less labeled: "HAZARDOUS WASTE--Federal Law Prohibits Improper Disposal. If found, contact the nearest police, public safety authority, Maine DEP at 1-800-452-1942 or EHS at The University of New England, at (207) 391-3491 or x2248.				

Inspector Name (print): \_\_\_\_\_ Inspector Initials: \_\_\_\_\_

Inspector Name (print): \_\_\_\_\_ Inspector Initials: \_\_\_\_\_

Inspector Name (print): \_\_\_\_\_ Inspector Initials: \_\_\_\_\_



**Individual Radioactive Shipment Inventory**

APPENDIX L

This form must be completed by the primary investigator and sent to the Radiation Safety Officer on completion. New orders for radioisotopes will not be approved until this form has been forwarded to the Radiation Safety Officer for review and signature.

<b>Date Received</b>				<b>Radioisotope</b>	
<b>Concentration (mCi/mL)</b>				<b>Quantity (mCi)</b>	
<b>Chemical Form</b>				<b>Individual Stock No.</b>	
<b>DATE</b>	<b>VOLUME REMOVED (mL)</b>	<b>ACTIVITY REMOVED (mCi)</b>	<b>VOLUME REMAINING (mL)</b>	<b>ACTIVITY REMAINING (mCi)</b>	<b>Signature</b>

Reviewed by RSO: \_\_\_\_\_

Date: \_\_\_\_\_

University of New England

Appendix M

**Radioactive Experimental Use Authorization Form**

To be completed by Principal Investigator:

<b>Radioisotope</b>		<b>Chemical Form</b>	
<b>Experimental Description</b> (attach additional forms if necessary)			
<b>Quantity</b> (in $\mu\text{Ci}$ or $\text{mCi}$ )			
<b>Frequency</b>	(circle one) week/month/year		
<b>Principal Investigator</b>			
<b>Persons Involved</b>			
<b>Waste Disposal Techniques</b>			

**To be completed by the RSO:**

Items required beyond safety glasses, gloves, lab coat:

	WB Badge		Ring Badge		Other PPE
<b>Additional PPE:</b>					
<b>Shielding:</b>					

Principal Investigator: \_\_\_\_\_

Date:

RSO Signature: \_\_\_\_\_

Date:

**Appendix N -Radioactive Waste Disposal Log Sheet (For Disposal)**

Nuclide	Activity	Date	Researcher Name
	Total:		

Appendix O-

Radioactive Waste Disposal Log Sheet (Hold for Decay)

Nuclide	Activity	Date	Researcher Name
	Total:		

### Appendix P-Radioactive Material Order and Receipt Form

This form must be completed by the individual accepting shipment of radioactive materials and sent to the Radiation Safety Officer or designee within 24 hours of receipt.

**Order Information**

Principal Investigator	Date of Order	Date Needed	Manufacture/Vendor
Radioisotope	Chemical Form	Activity Ordered	Amount Ordered

Radiation Safety Officer (or designee): \_\_\_\_\_ Date: \_\_\_\_\_

**Receiving Information**

Date and Time Received/Activity Received	Name of Person Receiving Package
Purchase Order Number	Visual Inspection (Pass / Fail)

**Outer Package Survey**

Dose rate at one meter	Dose rate at contact	Outer package wipe test
mR/hr	mR/hr	dpm/100 cm <sup>2</sup>

**Inner Package Survey**

Dose rate at contact	Primary container wipe test
mR/hr	dpm/100 cm <sup>2</sup>

Survey Performed By: \_\_\_\_\_

Date: \_\_\_\_\_

Reviewed By (RSO): \_\_\_\_\_

Date: \_\_\_\_\_

Action Levels :

Dose Rate:

0.5 mR/hr

Wipe Test Results:

2200 DPM/100 cm<sup>-2</sup>





### Appendix Q-LABORATORY INSPECTION CHECKLIST

Date of Inspection:	Conducted by:			
Department:	Building/Room #:			
Principal Investigator:	PI Present? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Type of Inspection: <input type="checkbox"/> Semi-Annual (scheduled) <input type="checkbox"/> Complaint Follow Up <input type="checkbox"/> High Risk/Urgent (random)				
<b>General Safety &amp; Environmental Conditions</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Corrective Action</b>
1. Are the lab rules posted on the outside of the door?				
2. Is the lighting in the laboratory adequate and in good condition?				
3. Is the temperature in the laboratory well controlled?				
4. Are items such as lab equipment and glass tubing stored in a manner so that they do not project beyond the edge of the counter or shelf?				
5. Are the food and beverage rules observed? (Such as food and drinks are not stored in the lab area).				
6. Are the ceiling tiles in place and free of any water leaks, or stains, etc.?				
7. Is the garbage free of broken glass or hazardous materials? Are broken glass boxes being utilized?				
8. Are doors closed, not propped, and free from obstruction?				
9. Are bench tops and storage areas uncluttered and orderly?				
10. Are aisles and exits free from obstruction?				
11. Are Exit signs illuminated and unobstructed?				
12. Are heavy objects stored on lower shelves?				
13. Are there means available to reach items above shoulder level safely, such as a step stool?				
14. Is there an 18" clearance from sprinkler heads? Is there a 24" clearance when there are no sprinkler heads?				
15. Are the interiors of refrigerators and freezers sound and free of chemical spills or contamination and with containers tightly closed?				
16. Are refrigerators and freezers labeled? "Flammables", "explosion proof" or "Not for Food Storage"?				
17. Are microwaves labeled "Not for food preparation"?				
18. Is the glassware free from cracks, chips and other defects?				
19. Are vacuum pump belt guards in place (if applicable)?				
<b>Personal Protective Equipment</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Corrective Action</b>
1. Are the personnel and students wearing appropriate footwear? (no open toe shoes)				
2. Are protective gloves available and matched to the hazard?				

3. Is eye protection available and used?				
4. Is there signage posted if eye protection is required?				
5. Are long pants and lab coats being worn?				
6. Is PPE being removed before leaving the laboratory?				
7. Is there any loud equipment that should be tested for hearing protection requirements or that already requires hearing protection?				
8. Are there any hazards that warrant the use of respiratory protection? If so, what type is used?				
9. Is there signage posted where respiratory protection is required?				
<b>Fume Hoods</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Corrective Action</b>
1. Are fume hoods clean and free of stored chemicals?				
2. Are fume hoods in good condition & inspected within the past year?				
3. Is the sash opening 18" or lower on the fume hood?				
<b>Safety Equipment and Emergency Response</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Corrective Action</b>
1. Are EHS emergency contact cards displayed near phones or in a conspicuous location?				
2. Are there at least two laboratory contacts with phone numbers on the EHS emergency contact card?				
3. Are safety showers and eye wash facilities accessible and free from obstruction?				
4. Are eyewashes in good condition, clean and capped?				
5. Are first aid kits in designated areas? Are they properly stocked with the supply list inside, without expired products?				
6. Are fire extinguishers clearly identified, accessible and free from obstruction?				
7. Are extinguishers fully charged and inspected annually?				
8. Are emergency switches clearly identified for power and gas supply and easily accessible?				
9. Are lab personnel aware of emergency procedures in their area?				
10. Are lab personnel aware of chemical/biological spill procedures?				
11. Are there spill cleanup kits or supplies available in the lab area?				
12. Do personnel know the location of emergency equipment in the area?				
13. Are all fire alarm pull stations unobstructed?				
14. Are fire evacuation maps posted and unobstructed (with two means of egress)?				
15. Are personnel familiar with the evacuation plan and muster points?				
16. Do all lab personnel question all visitors or suspicious persons when they enter the lab?				
<b>Electrical Safety</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Corrective Action</b>
1. Are extension cords or "Daisy Chains" being used as permanent wiring for appliances in the lab area?				

2. Is the wiring on laboratory equipment in good condition (no frayed or exposed wires) and secure along the wall or benches?				
3. Are electrical cords and appliances away from flammables and water (sinks)?				
4. Are outlets near sinks GFCI?				
5. Are all electrical outlet and switch plates in place?				
6. Are red outlets being used for critical equipment that requires continuous power?				
7. Is the circuit breaker box unobstructed and clear by at least 36 inches? Is it signed to keep clear?				
<b>Chemical Safety</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Corrective Action</b>
1. Is the chemical hygiene plan readily accessible either on a computer or a hard copy?				
2. Do the lab personnel know who the Chemical Hygiene Officer is for their area?				
3. Are all chemical labels intact and not defaced?				
4. Are signs on storage areas and laboratories consistent with hazards within?				
5. Is there an updated inventory of the chemicals in the laboratory?				
6. Are the Safety Data Sheets available for all chemicals present in the laboratory?				
7. Do the lab personnel know where to find the SDS's for the lab chemicals? (Central storage area?)				
8. Are all chemical containers well labeled, capped and in good condition?				
9. Are personnel and students familiar with spill cleanup requirements of their chemicals?				
10. Are spill cleanup supplies easily accessible?				
11. Is there restricted access to controlled substances?				
12. Is there a method for logging access to controlled substances and has it been utilized?				
<b>Hazardous Materials Storage</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Corrective Action</b>
1. Are all chemicals stored correctly, segregated by hazard and according to compatibility (e.g., organic from oxidizers, flammable from acids)?				
2. Are flammables stored in marked "Flammable" cabinets?				
3. Are Acids stored in marked "Acid" cabinets?				
4. Are corrosive & flammable chemicals stored below "eye level"?				
5. Are chemicals kept away from desks?				
6. Are highly flammable liquids stored away from sources of heat and ignition (including Bunsen burners in fume hoods)?				
7. Are all containers of non-hazardous materials used/stored limited to small quantities?				

8. Do chemical containers have a second containment, particularly containers > 20L?				
9. Are all glass containers stored so they are not on the floor?				
<b>Compressed Gas Cylinders</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Corrective Action</b>
1. Are gas cylinders properly chained/secured and in use?				
2. Are cylinder caps in place when cylinders are not in use or being moved?				
3. Are cylinders transported on a cart with chains?				
4. Are cylinders properly labeled?				
5. Are full and empty cylinders stored separately?				
6. Are regulators, proper connections and tubing in good condition?				
<b>Hazardous Waste Disposal Satellite Accumulation Areas-Biddeford Only</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Corrective Action</b>
1. Is there a Satellite Accumulation Area (SAA) located in the lab?				
2. Is there less than 55 gallons of waste stored in the lab area?				
3. Is the SAA located at the point of generation and under the control of the operator?				
4. Are the waste containers labeled with the words "Hazardous Waste" and contents identified?				
5. Is the weekly SAA inspection log up to date?				
6. Are all waste containers intact and free of cracks or bulges and compatible with their contents?				
7. Are all hazardous waste containers in secondary containment bins?				
<b>Training</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Corrective Action</b>
1. Have all personnel and students had lab safety training/orientation?				
2. Have all personnel and students been trained on the emergency plan for the lab?				
3. Have all personnel taken the required EHS Blackboard training?				
<b>Chemical Hygiene Plan</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Corrective Action</b>
1. Is the safety manual easily available either on computer or a hard copy?				
2. Are Laboratory Standard Operating Procedures (SOP) easily accessible?				
3. Are eyewashes, safety showers, and fume hoods inspected regularly?				
4. Are there any chemical segregation issues in storage?				
<b>General Biosafety</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Corrective Action</b>
1. Are you working with rDNA, select agents or human tissues? a) If so what is your IBC protocol number?				
2. Is there Bio-Hazardous Material present in the lab?				
3. If Bio-Safety Level 2 or 3, Is there a Bio-Hazard sign affixed to the outside door?				

4. Are cleaning procedures established for decontamination of work surfaces?				
5. Are all needles and syringes disposed of in rigid sharps containers and not overflowing?				
6. Are any needles or syringes bent or re-capped when disposed?				
7. Is biohazard waste treated before disposal? (i.e. autoclaved)				
8. Are other biohazard waste containers used properly where needed (e.g. autoclave bags, bio-hazard boxes, etc.)?				
9. Are hand washing facilities or hand cleansers readily available?				
10. Is the universal Bio-Hazard symbol affixed to containers, refrigerators, or freezers that contain blood or other potentially infectious material?				
11. Has the bio-safety cabinet been certified in the last year?				
<b>Biosafety Level II (see separate checklist)</b>				
<b>Radiation Safety: General ionizing radiation safety</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Corrective Action</b>
1. Are registered areas properly designed?				
2. Is radiation monitoring and detection equipment readily available and calibrated?				
3. Are personnel trained appropriately?				
4. Are radioactive materials securely stored according to procedures?				
5. Is radioactive waste securely stored and disposed of according to procedures?				
6. Is the inventory of all radioactive materials up-to-date?				
7. Is there an inventory of all radiation counting and monitoring?				
8. Are all radiation-emitting operations restricted to a low-density traffic area and are adequately shielded?				
9. Are safe work procedures and decontamination/emergency procedures established?				
<b>Laser Safety</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Corrective Action</b>
1. Do laser laboratories have appropriate warning signs?				
2. Are lasers equipped with protective housings, safety interlocks, key controls, beam stops, attenuators and scanning safety guards as appropriate?				
3. Are the laser operators provided with wavelength specific eye protection?				
<b>Waste Accumulation Area – Portland Only</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Corrective Action</b>
1. Is there a Waste Accumulation Area in the lab?				
2. Are the containers labeled with the words “Hazardous Waste”?				
3. Is each container labeled with the start date and full date for each?				
4. Are all waste containers intact and free of cracks and compatible with their contents?				

REMARKS: \_\_\_\_\_  
\_\_\_\_\_

Pictures Taken? Yes No Copies of Records/Inspections provided? Yes No Follow Up required? Yes No

## APPENDIX R:

## CHEMICAL STORAGE TABLE SUPPLEMENT FOR CHEMICAL STORAGE SCHEME ONE SOG

## Flammable Toxic Reactive Corrosive

Group	Properties	Important Notes	Storage	Examples
<b>Group 1</b>  <b>Flammables and Combustibles (Includes organic acids)</b>  AKA: organics, solvents	Flammable liquids have a flashpoint (FP) below 100°F (38°C).  Combustible liquids have a flashpoint above 100°F and below 140°F  Flashpoint is the lowest temperature at which a liquid gives off enough vapor to ignite.	The MSDS provides the flashpoint for flammable and combustible liquids.  Ignition sources include spark from electrical outlet, vacuum pumps, and static electricity.	FP ≤ 140°F (60°C) store in a metal flammable cabinet that is completely enclosed. If vented, the vent must have a flash arrestor.  NO cardboard shipping boxes in the cabinet.  Never store in cold rooms or refrigerators (unless the refrigerator is explosion proof).  Do not store with oxidizers or inorganic acids.	<u>All alcohols:</u> butanol, ethanol, methanol, isopropanol, etc.  Acetone, acetaldehyde, acetonitrile, amyl acetate, benzene, cyclohexane, dimethyldichlorosilane, dioxane, ether, ethyl acetate, hexane, hydrazine, methyl butane, picolene, pyridine, all silanes, tetrahydrofuran, toluene, triethylamine, xylene, etc.  <u>Combustibles:</u> dimethylformamide, formaldehyde
<b>Peroxideformers</b>  Generally, Group I	Highly flammable. May form low-power explosives that are very sensitive to shock, sparks, light, strong, oxidizing and reducing agents, friction, and high temperatures.	Read Peroxide-Forming Chemicals SOP  Distillation, evaporation, or other concentration can present a high risk of explosion. Test for peroxide formation monthly.	Store with flammables.  Date when received and when opened.  Dispose of as hazardous waste after 12 months.	Ether (diethyl and isopropyl), tetrahydrofuran, acetaldehyde, etc.
<b>Group II (volatile) and VII (non-volatile) Toxics</b>  AKA: poisons, organics, halogenated solvents, carcinogens, mutagens, reproductive toxins	Chronic exposure is a health hazard. Avoid inhalation, skin contact.  Many toxins solvents are highly volatile. Non-flammable (some are combustible)	Commonly mistaken for a flammable liquid.	OK to store with flammables in flammable cabinet.  Alternative: Any enclosed cabinet or shelf to protect from accidental breakage.  Store containers larger than 1 liter below bench level.  Do not store with bases.	<u>Volatile toxics:</u> carbon tetrachloride, chloroform, dimethyl sulfate, halothane, mercaptethanol, methylene chloride (dichloromethane), phenol.  <u>Non-volatile toxics:</u> acrylamide, solutions, ethidium bromide, triethanolamine
<b>Group III (oxidizing acids)</b>	Oxidizing acids are highly reactive, and may react with each	Concentrated (>70%) perchloric acid reacts with	Oxidizing acids should be separated from each other by	<u>Oxidizing inorganic acids:</u> nitric, sulfuric, perchloric, chromic.

	other. Corrosive, burns skin and eyes.	wood and paper and may ignite. Never store concentrated perchloric acid directly on wood shelves without a plastic tub. Also, see Group IV.	use of plastic tub. Oxidizing acids can be stored with mineral acids.	
<b>Group IV Mineral Acids and Organic Acids</b>	Corrosive, burns skin and eyes.  Organic acids are combustible (FP>°F<140°F)	Acid mist escapes from closed bottles and builds up inside unvented cabinets causing corrosion of labels, metal cabinets, etc.	Store in the vented cabinet under fume hood or in a vented stand alone cabinet.  Do not store with bases.  Store below eye level.  It is a good idea to keep hydrofluoric acid in a separate tub or tray to avoid contamination of surfaces.	<u>Mineral acids:</u> hydrochloric, phosphoric, hydrofluoric  <u>Organic acids:</u> acetic, acrylic, acetic anhydride, butyric, formic, glacial acetic, isobutyric, trifluoroacetic, etc.
<b>Group V Lipid Inorganic Bases</b>  AKA: alkaline	Corrosive burns skin and eyes.	Avoid contact with acids and volatile toxics.	Store in a separate cabinet.  Alternative: store with other chemicals and keep in a separate tub or tray.  Can be stored with flammables if no volatile toxic (halogenated organics) are present.  Store below eye level.	Sodium hydroxide, ammonium hydroxide, calcium hydroxide, potassium hydroxide, aqueous ammonia
<b>Group VI Oxidizing Liquids</b>  (Excluding Oxidizing acids)  AKA: reactives	Provides oxygen that feeds fires and makes fires very difficult to extinguish. Oxidizing liquids react with many things potentially causing explosions or corrosion of surfaces.	The oxidizer symbol (a burning O) may be mistaken for a flammable symbol (a flame). Oxidizers are considered ignitable for hazardous waste management purposes.	Store on a separate shelf. Do not store directly on wood shelf or paper.  If stored near other chemicals, including other oxidizers keep in a separate tub or tray.  Do not store with flammables.	Ammonium persulfate, hydrogen peroxide ≥ 30%



<p>Group VIII</p> <p><b>Pyrophorics and Water Reactives</b></p>	<p>Ignite spontaneously in air. Water reactives can react with moisture in the air to produce a flammable gas.</p> <p>Metal hydrides react violently with water, some ignite spontaneously in air.</p>	<p>Read Pyrophoric and Water Reactives SOP</p>	<p>Waterproof double containment (the shipping container may be an appropriate second container).</p> <p>Isolate from other chemicals. OK to store with dry chemicals.</p> <p>Do not store with liquid chemicals (oxidizers, flammables, acids, bases, toxics, etc.)</p>	<p><u>Metal hydrides:</u> sodium borohydride, calcium hydride, lithium aluminum hydride.</p> <p><u>Pyrophorics:</u> borane, diborane, dichloroborane, lithium, phosphorous, 2-furidehyde, diethyl aluminum chloride, trimethyl aluminum, etc.</p>
<p><b>Group IX Dry Solids</b></p>	<p>Varies. They are dry, but when wet, may have different properties, depending on the material.</p>	<p>Keep Dry.</p> <p>Indicate where the more toxic materials are located. (See SOP)</p>	<p>Cabinets are suggested, but shelves are O.K. Store above liquids and separate from liquids.</p>	<p><u>Benzidine, cyanogens, bromide, oxalic acid, potassium hydroxide.</u></p>
<p><b>Chemicals with no great storage options</b> e.g. anhydrides</p>	<p>These materials react with many things.</p>	<p>Keep isolated in some way by using secondary containment. Minimize quantities on hand.</p>	<p>Will depend on specific chemical. Call EHS for guidance.</p>	<p>Acetic anhydride, trichloro acetic anhydride</p>



## Appendix S-CHEMICAL SEGREGATION and STORAGE CHART

CLASS OF CHEMICALS	CHEMICAL EXAMPLES	RECOMMENED STORAGE METHOD	INCOMPATIBLES SEE SDS IN ALL CASES	PROPERTIES
<b>Compressed Gases -Flammable</b>	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.
<b>Compressed Gases -Oxidizing</b>	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.
<b>Compressed Gases -Poisonous</b>	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.
<b>Corrosives – Acids INORGANIC</b>	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. <b>Organic acids.</b>	pH ≤ 2 burns eyes and skin.
<b>Corrosives – Acids ORGANIC</b>	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. <b>Inorganic acids.</b>	pH ≤ 2 burns eyes and skin.
<b>Corrosives - Bases</b>	Ammonium hydroxide, Potassium hydroxide, Sodium hydroxide	Store in separate storage cabinet.	Flammable liquids, oxidizers, poisons, and	pH ≥ 12.5 burns eyes and skin.

CLASS OF CHEMICALS	CHEMICAL EXAMPLES	RECOMMENDED STORAGE METHOD	INCOMPATIBLES SEE SDS IN ALL CASES	PROPERTIES
<b>Flammable Liquids And Combustible Liquids</b>	<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. <i>*Peroxide forming chemicals must be dated upon opening e.g. Ether Tetrohydrofuran*</i></p> <p>No cardboard shipping boxes in cabinet.</p> <p>Never store in cold rooms or refrigerators (unless refrigerator is explosion proof)</p>	<p>acids.</p> <p>Acids, bases, oxidizers, and poisons.</p>	<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>
<b>Flammable Solids</b>	<p>White or red phosphorus, Carbon, Charcoal, metal powders.</p>	<p>Store in a separate dry cool area away from oxidizers, corrosives.</p>	<p>Acids, bases, oxidizers, and poisons.</p>	<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)</p> <p>Pyrophoric (white phosphorus)</p> <p>Can be ignited by friction.</p>
<b>Water Reactive Chemicals</b>	<p>Sodium metal, Potassium metal, Lithium metal, Lithium Aluminum hydride</p>	<p>Store in a dry, cool location. Protect from water and the fire sprinkler system, if applicable. Label location – WATER REACTIVE CHEMICALS</p>	<p>Separate from all aqueous solutions, and oxidizers.</p>	<p>Reacts with water to produce highly flammable hydrogen gas.</p>
<b>Oxidizers</b>	<p>Sodium hypochlorite, Benzoyl peroxide, Potassium permanganate, Potassium chlorate, Potassium dichromate. The following are generally considered oxidizing substances: Peroxides, Perchlorates, Chlorates, Nitrates, Bromates, Superoxides</p>	<p>Store in a spill tray inside a non-combustible cabinet, separate from flammable, combustible materials, and all organic materials.</p>	<p>Separate from reducing agents, flammables, and combustibles and organic materials.</p>	<p>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.</p>

CLASS OF CHEMICALS	CHEMICAL EXAMPLES	RECOMMENDED STORAGE METHOD	INCOMPATIBLES SEE SDS IN ALL CASES	PROPERTIES
<b>Poisons/Toxic</b>	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.
<b>Volatile and Non-Volatile Toxic Liquids</b>	<u>Volatile toxics</u> Carbon, tetrachloride, chloroform, dimethyl sulfate, halothane, mercaptoethanol, methylene, chloride (dichlormethane), phenol.  <u>Non-volatile toxics</u> Acrylamide solutions, ethidium bromide, triethanolamine.	Ok to store with flammables.  Alternative: Any enclosed cabinet of shelf to protect from accidental breakage.	Bases, water reactives	Chronic exposure is a health hazard. Avoid inhalation and skin contact.  Many toxic solvents are highly volatile.  Non-flammable (some are combustible)
<b>General Chemicals -Non-Reactive</b>	Agar, Sodium Chloride, Sodium bicarbonate, and most non-reactive salts	Store on general laboratory benches or shelving.	See SDS	

## APPENDIX T: PPE SELECTION GUIDE

<b>Exposed Portion of Body</b>	<b>Hazard</b>	<b>Protective Item</b>
Head	Impact, flying particles Electric shock Contamination	Strong plastic hard hats Dielectric hard hats Paper head covers
Eyes and Face	Flying particles/ Molten metal Harmful radiant energy Splash	Safety glasses Safety glasses (prescription) Face shields Hoods, shot-blasted helmets Glasses & goggles Chemical or metallic (filter lens) Splash-deflecting and/or vapor-tight goggles Face shields
Ear	Excessive noise levels	Ear plugs or inserts Ear muffs or cups
Hands and Arms	Impacts and cuts Temperature extremes Corrosive chemicals Contamination Electric Shock	Gloves, Arm protectors Gloves and pads Gloves Gloves Gloves, blankets, tools
Feet	Crushing hazards to toes or instep Corrosive chemicals Wet conditions Contamination	Safety shoes Treated shoes or boots Boots or wood-soled shoes Toe rubbers, shoe covers
Whole body and/or torso	Fire Temperature Corrosive chemicals Molten metal Impacts and cuts Falls Contamination	Fire-retardant clothing Asbestos and wool clothing Laboratory aprons Impervious clothing Pads and aprons Safety belts and harnesses Coveralls



APPENDIX U: Confined Spaces and Permit Required Confined Spaces

**Portland Campus:**

Location of Space:	Type of Space:	Reason for entering space:	Classification:
1-Outside Library on Sidewalk	Manhole	Check valves and steam gauges	Permit Required
2-Behind Grounds Shop/near bldg	Manhole	Check valves and steam gauges	Permit Required
3-Behind Grounds shop/in woods	Manhole	Check valves and steam gauges	Permit Required
4-Behind Steam Plant	Manhole	Check valves and steam gauges	Permit Required
5-Crawl Space at Proctor Hall	Crawl Space	Steam pipe maintenance	Confined Space
6-Crawl Space in Blewett Boiler Rm	Crawl Space	Steam pipe maintenance	Confined Space
7-McDougall Steam Boiler Tanks (2)	Tanks	Boiler clean out	Permit Required
8-Blewett Hall Steam Boiler Tank (1)	Tank	Boiler clean out	Permit Required
9-Outside Coleman Hall	Manhole	Check valves and steam gauges	Permit Required
10-Coleman Hall Crawl Space	Crawl Space	Pumps/motors/heating/drainage	Confined Space
11-Alexander Hall Crawl Space	Crawl Space	System Maintenance	Confined Space
12-Library Elevator Shaft	Elevator Pit	Elevator Maintenance	Confined Space
13-Alexander Hall Elevator	Elevator Pit	Elevator Maintenance	Confined Space
14-Blewett Hall Elevator	Elevator Pit	Elevator Maintenance	Confined Space
15-College of Pharmacy Elevator	Elevator Pit	Elevator Maintenance	Confined Space
16-Finley Hall Elevator	Elevator Pit	Elevator Maintenance	Confined Space
17-Goddard Hall Elevator	Elevator Pit	Elevator Maintenance	Confined Space
18-Hersey Hall Elevator	Elevator Pit	Elevator Maintenance	Confined Space
19-Proctor Hall Elevator	Elevator Pit	Elevator Maintenance	Confined Space
20-Oral Health Center (10 Spaces)	Roof Gables	Fire system maintenance	Confined Space

Total Spaces=30

**Biddeford Campus:**

<b>Location of Space:</b>	<b>Type of Space:</b>	<b>Reason for entering space:</b>	<b>Classification:</b>
1-Alfond Forum Elevator	Elevator Pit	Elevator Maintenance	Confined Space
2-Alfond Medical Bldg Elevator	Elevator Pit	Elevator Maintenance	Confined Space
3-Bush Center Elevator	Elevator Pit	Elevator Maintenance	Confined Space
4-Champlain Hall Elevator	Elevator Pit	Elevator Maintenance	Confined Space
5-Decary Hall Elevator	Elevator Pit	Elevator Maintenance	Confined Space
6-East Hall Elevator	Elevator Pit	Elevator Maintenance	Confined Space
7- Featherman Hall Elevator	Elevator Pit	Elevator Maintenance	Confined Space
8-Ketchum Library Elevator	Elevator Pit	Elevator Maintenance	Confined Space
9-Marcil Hall Elevator	Elevator Pit	Elevator Maintenance	Confined Space
10-Marince Science Ctr Elevator	Elevator Pit	Elevator Maintenance	Confined Space
11-Morgane Hall Elevator	Elevator Pit	Elevator Maintenance	Confined Space
12-Pickus Hall Elevator	Elevator Pit	Elevator Maintenance	Confined Space
13-Sokokis Hall Elevator	Elevator Pit	Elevator Maintenance	Confined Space
14-Stella Maris Elevator	Elevator Pit	Elevator Maintenance	Confined Space
15-West Hall Elevator	Elevator Pit	Elevator Maintenance	Confined Space
16-Decary Hall Loading Dock Interior	Crawl Space	Steam Trap Maintenance	Confined Space
17-Small grate in the wall of the stairwell outside of Decary kitchen	Crawl Space	Piping and steam trap maintenance (across entire bldg)	Confined Space
18-Small wooden door in the stairwell near the dining hall entrance in Decary	Crawl Space	Piping and steam trap maintenance (across entire bldg)	Confined Space with Attendant
19-Door in the floor of Decary, next to the vending machines near Leonard door	Crawl Space	Piping and steam trap maintenance (across entire bldg)	Confined Space with Attendant
20-Alfond Science Building: Mechanical West Penthouse-Room 400; AHU 6, 3, 1	Equipment entrance	Service motor and belts in the air handling unit	Confined Space with LOTO

21-Alfond Science Building: Mechanical East Penthouse-Room 401; AHU 1, 8, 7, RAF 2 and EAHU2	Equipment entrance	Service motor and belts in the air handling unit	Confined Space with LOTO
22-Alfond Science Building: Fresh Air Intake Plenum in West Penthouse-Room 400 (Metal door entrance; no handles inside)	Limited Access	Cleaning and maintenance	Space of Concern (limited exit)
23-Alfond Science Building: Duct entrance for RAF2 in West Penthouse Room 400	Duct work entrance	Access and service motor	Confined Space with LOTO
24- Alfond Science Building: Fresh Air Intake Plenum in the Front of East Penthouse-Room 401 (Metal door entrance; no handles inside)	Limited Access	Cleaning and maintenance	Space of concern (limited exit)
25-Alfond Science Building: Fresh Air Intake Plenum in the Rear of East Penthouse-Room 401 (Metal door entrance; no handles inside)	Limited Access	Cleaning and maintenance	Space of concern (limited exit)
26-Campus Center: Pool Mechanical Room Domestic Hot Water Holding Tank	Tank Access	Cleaning and maintenance	Permit Required
27-Campus Center: Pool Mechanical Room Pit with piping(no easy in or easy out)	Open Pit	Exercising pump valves, cleaning the strainer	Confined Space
28-Campus Center: Pool Mechanical Room Pool Filter tank (large gray tank in corner)	Tank Access	Clean filter by removing and scraping sand out of the bottom	Permit Required
29-Campus Center: Pool Roof Top area Roof top Unit HRU-1	Equipment entrance	Maintenance and repair	Confined Space with LOTO
30-Assisi Boiler Room: Domestic Hot Water Holding Tank (in rear of the building)	Tank Access	Cleaning and Maintenance	Permit Required
31- Assisi Boiler Room: Domestic Hot Water Holding Tank (near the door)	Tank Access	Cleaning and Maintenance	Permit Required
32-Assisi Boiler Room: Boiler 1 (Access on top of tank)	Tank Access	Inspections and Maintenance	Permit Required
33-Assisi Boiler Room: Boiler 2 (Access on top of tank)	Tank Access	Inspections and Maintenance	Permit Required
34-Assisi Boiler Room: Boiler 3 (Access on top of tank)	Tank Access	Inspections and Maintenance	Permit Required



35-Campus Center: Chiller Plant Roof; Cooling Tower 1	Equipment Access	Cleaning and Maintenance	Confined Space with LOTO
36-Campus Center: Chiller Plant Roof; Cooling Tower 2	Equipment Access	Cleaning and Maintenance	Confined Space with LOTO
37-East Hall: Rear sidewalk; manhole with access to piping	Manhole	Contractors performing maintenance and cleaning	Permit Required
38-Marine Science Center: Large Seawater holding tank in the parking lot	Tank Access	Cleaning and Maintenance	Permit Required
39-Marine Science Center: Room 208; Seawater Storage tank on second floor in mechanical room space	Tank Access	Cleaning and Maintenance	Confined Space
40-Marine Science Center: Outdoor fish tanks on patios in rear and on side of building	Tank Access	Cleaning and Maintenance	Confined Space
41-Harold Alfond Forum: Ice pit in the Zamboni room at the ice ringk (9 ft. pit)	Pit	Cleaning and Maintenance	Confined Space
42-Harold Alfond Forum: Cooling tower unit on the upper roof	Equipment Access	Cleaning and Maintenance	Confined Space with LOTO
43-Harold Alfond Forum: Ground hatch next to generator in the back of the building that is a pump station	Manhole	Maintenance	Permit Required
44-Decary Hall Basement: Cleaver Brooks Steam Boiler	Tank Access	Cleaning and Maintenance	Permit Required
45-Decary Hall Basement: Federal Steam Boiler	Tank Access	Cleaning and Maintenance	Permit Required
46-Sokokis Hall: Ground hatch next to generator that is a pump station with 4,000 Gallon holding tank for waste water	Manhole	Pumping and Maintenance	Permit Required
47-Decary Hall: Grease Trap with two manholes at the loading dock	Manhole	Pumping station for extracting grease from trap	Permit Required
48-Harold Alfond Forum: Grease Trap with manhole in front of the dumpster on the side of the building facing Sokokis Hall	Manhole	Pumping station for extracting grease from trap	Permit Required

49-Wastewater Treatment Plant: Manhole with flow meter on the side of the hill near the WWTP	Manhole	Reading flow meter; (hazardous atmosphere)	Permit Required for entry
50-Wastewater Treatment Plant: Two concrete tanks under the floor with hatches	Tank Access	Wastewater Treatment plant maintenance/cleaning (hazardous atmosphere)	Permit Required for entry
51-Wastewater Treatment Plant: Two 20,000 gallon sludge digester pits	Pit	Wastewater Treatment plant maintenance/cleaning (hazardous atmosphere)	Permit Required for entry
52-Wastewater Treatment Plant: 8,000 gallon thickened sludge tank with floor hatch	Tank Access	Wastewater Treatment plant maintenance/cleaning (hazardous atmosphere)	Permit Required for entry
53-Wastewater Treatment Plant: Effluent Chambers with 4 Channels	Pits	Wastewater Treatment plant maintenance/cleaning (hazardous atmosphere)	Permit Required for entry
54-Wastewater Treatment Plant: Effluent pump area (down ladder under grated floor)	Pit	Wastewater Treatment plant maintenance/cleaning (hazardous atmosphere)	Permit Required
55-Wastewater Treatment Plant: Two Dechlorination Tanks by riverfront tent with two manholes	Manhole(s)	Wastewater Treatment plant maintenance/cleaning (hazardous atmosphere)	Permit Required
56-Wastewater Treatment Plant: 20,000 Gallon Effluent Equalization Tank with hatch	Tank	Wastewater Treatment plant maintenance/cleaning (hazardous atmosphere)	Permit Required

**APPENDIX V: HEARING CONSERVATION AREAS TESTED**

<b>Area Tested</b>	<b>Method Used</b>	<b>Department Affected</b>	<b>Decibel level reading</b>	<b>Date Tested</b>	<b>Pass/Fail (&lt;85db to pass)</b>
Assisi Hall Mechanical Room	Casella CEL Dosimeter	Facilities	85db	7/24/2012	Fail*Hearing Protection Required*
Marcil Hall Mechanical Room	Casella CEL Dosimeter	Facilities	76db	7/24/2012	Pass
Petts Health Mechanical Rm	Casella CEL Dosimeter	Facilities	76-79db	7/24/2012	Pass
Welcome Cottage Basement	Casella CEL Dosimeter	Facilities	64db	7/24/2012	Pass
Pickus Mechanical Room	Casella CEL Dosimeter	Facilities	74db	7/24/2012	Pass
Alfond Health Mechanical Rm	Casella CEL Dosimeter	Facilities	67db (80db w/ equip running)	7/24/2012	Pass
Bush Center Mechanical Rm	Casella CEL Dosimeter	Facilities	64db	7/24/2012	Pass
Featherman Hall Mechanical Rm	Casella CEL Dosimeter	Facilities	68db	7/24/2012	Pass
Morgane Hall Mechanical Rm	Casella CEL Dosimeter	Facilities	74-81 db	7/24/20112	Pass
Decary Mechanical Rm	Casella CEL Dosimeter	Facilities	75-80 db (80-82 db near boiler running)	7/26/2012	Hearing Protection Recommended
MARC Mechanical Room 1st Fl	Casella CEL Dosimeter	Facilities	71-83db (83db with damper box open)	7/25/2012	Pass, box should be closed
MARC Mechanical Room 2nd Fl	Casella CEL Dosimeter	Facilities	63-73 db	7/25/2012	Pass
Gregory Annex	Casella CEL Dosimeter	Facilities	No noise	7/25/2012	Pass
Frederick	Casella CEL Dosimeter	Facilities	No noise	7/25/2012	Pass
Creative Arts	Casella CEL Dosimeter	Facilities	No noise	7/25/2012	Pass
Business Office	Casella CEL Dosimeter	Facilities	No noise	7/25/2012	Pass
Housing Park N	Casella CEL Dosimeter	Facilities	No noise	7/25/2012	Pass
Sokokis Mechanical Room	Casella CEL Dosimeter	Facilities	61-68db (68db near fan)	7/25/2012	Pass
Campus Center Chiller Plant	Casella CEL Dosimeter	Facilities	83-87 db	7/26/2012	Fail *Hearing Protection Required* Already Posted.
Camplain Hall Mechanical Rm	Casella CEL Dosimeter	Facilities	70-74 db	7/25/2012	Pass
East Hall Mechanical Room	Casella CEL	Facilities	65-69 db	7/25/2012	Pass

	Dosimeter				
West Hall Mechanical Room	Casella CEL Dosimeter	Facilities	64-68 db	7/25/2012	Pass
WWTP	Casella CEL Dosimeter	Facilities/ WWTP employee	76-78 db	7/26/0212	Pass
WWTP Small room on side (filter area)	Casella CEL Dosimeter	Facilities/ WWTP employee	84 db	7/26/2012	Pass, would recommend hearing protection be worn
WWTP Blower Room	Casella CEL Dosimeter	Facilities/ WWTP employee	97-98 db	7/26/2012	Fail*Hearing Protection Required* Already posted.
<u>Carpentry Shop:</u>					
Belt Sander	Casella CEL Dosimeter	Carpentry	75-76 db	8/14/2012	Pass
Band Saw	Casella CEL Dosimeter	Carpentry	74-89 db	8/14/2012	Hearing Protection Recommended
Table Saw	Casella CEL Dosimeter	Carpentry	84-88 db	8/14/2012	Hearing Protection Recommended
Chop/Mitre Saw	Casella CEL Dosimeter	Carpentry	93-98 db	8/14/2012	Fail, Hearing Protection Required
Dust Collector	Casella CEL Dosimeter	Carpentry	79-80 db	8/14/2012	Pass
Router (Hand Tool)	Casella CEL Dosimeter	Carpentry	95 db	8/14/2012	Fail, Hearing Protection Required
Skill Saw	Casella CEL Dosimeter	Carpentry	98-100 db	8/14/2012	Fail, Hearing Protection Required
<u>Paint Shop:</u>					
Line Striper					
Paint Shaker/Mixer					
<u>Cage Shop:</u>					
Drill Press					
Bench Grinder					
Electric hand saw					
Air Compressor					
<u>Auto Shop Area:</u>					
Wheel balancer	Casella CEL Dosimeter	Auto Shop	67db	8/8/2012	Pass
Clean up/prep sander	Casella CEL Dosimeter	Auto Shop	95-97 db	8/8/2012	Fail, Hearing Protection Required
Auto shop sander	Casella CEL Dosimeter	Auto Shop	105-107 db	8/8/2012	Fail, Hearing Protection Required
3/8 Electric Ratchet	Casella CEL Dosimeter	Auto Shop	94-96 db	8/8/2012	Fail, Hearing Protection Required
1/2 In Impact Gun	Casella CEL Dosimeter	Auto Shop	95-98db/105 db	8/8/2012	Fail, Hearing Protection Required
Board Sander	Casella CEL	Auto Shop	88 db	8/8/2012	Fail, Hearing

	Dosimeter				Protection Required
DA Sander	Casella CEL Dosimeter	Auto Shop	80-84 db	8/8/2012	Hearing Protection Recommended
Electric Grinder	Casella CEL Dosimeter	Auto Shop	95-97 Db	8/8/2012	Fail, Hearing Protection Required
Reciprocating Saw	Casella CEL Dosimeter	Auto Shop	98-100 db	8/8/2012	Fail, Hearing Protection Required
Tire Changer	Casella CEL Dosimeter	Auto Shop	80-89 db	8/8/2012	Hearing Protection Recommended
Vehicle Lift	Casella CEL Dosimeter	Auto Shop	80 db/89 db up	8/8/2012	Hearing Protection Recommended
Air Hammer	Casella CEL Dosimeter	Auto Shop	106-108 db	8/8/2012	Fail, Hearing Protection Required
<u>Grounds Equip:</u>					
John Deere 4720 Tractor	Casella CEL Dosimeter	Grounds	88 db	8/8/2012	Fail, Hearing Protection Required
CAT 416C Backhoe Serial # 1WR03371	Casella CEL Dosimeter	Grounds	78 db inside 88 db outside	8/8/2012	Hearing Protection Recommended
John Deere 2720 Tractor	Casella CEL Dosimeter	Grounds	90-97 Db	8/8/2012	Fail, Hearing Protection Required
John Deere 455 Tractor/Mower Serial # M00455C093339	Casella CEL Dosimeter	Grounds	95-96 db	8/8/2012	Fail, Hearing Protection Required
John Deere 455 Tractor/Mower Serial # M00455C030769	Casella CEL Dosimeter	Grounds	95-96 db	8/8/2012	Fail, Hearing Protection Required
John Deere 850 Tractor/Mower Serial # 0850D12291CH	Casella CEL Dosimeter	Grounds	97-98 db	8/8/2012	Fail, Hearing Protection Required
John Deere 997 Mower	Casella CEL Dosimeter	Grounds	95-97 db	8/8/2012	Fail, Hearing Protection Required
John Deere LX185 Mower	Casella CEL Dosimeter	Grounds	92-93 db	8/8/2012	Fail, Hearing Protection Required
Yamaha Golf Carts	Casella CEL Dosimeter	Grounds	88-94 db	8/8/2012	Fail, Hearing Protection Required
JD Gator XUV Utility Car Serial #MOXUVGX013062	Casella CEL Dosimeter	Grounds	75-80 db	8/8/2012	Pass
Electric Trimmers	Casella CEL Dosimeter	Grounds	96-98 db	8/8/2012	Fail, Hearing Protection Required
Walk Behind Lesco Airator	Casella CEL Dosimeter	Grounds	84 db	8/8/2012	Hearing Protection Recommended
Walk Behind Honda Blower	Casella CEL Dosimeter	Grounds	74-87 db	8/8/2012	Hearing Protection Recommended
Walk Behind Bed Edger	Casella CEL Dosimeter	Grounds	89-90 db	8/8/2012	Fail, Hearing Protection Required
Backpack Blowers	Casella CEL Dosimeter	Grounds	102-103 db	8/8/2012	Fail, Hearing Protection Required

Push Mowers	Casella CEL Dosimeter	Grounds	85-86 db	8/8/2012	Fail, Hearing Protection Required
Wheel Grinder	Casella CEL Dosimeter	Grounds	81 db alone/95-97 db w/work	8/8/2012	Fail, Hearing Protection Required
Paint Striper	Casella CEL Dosimeter	Grounds	88-91 db	8/8/2012	Fail, Hearing Protection Required
<b>Area Tested</b>	<b>Method Used</b>	<b>Department Affected</b>	<b>Decibel level reading</b>	<b>Date Tested</b>	<b>Pass/Fail (&lt;85db to pass)</b>
<u>MSC Wood Shop, BC:</u>					
Grinder	Casella CEL Dosimeter	MSC	80.7	4/30/2013	Pass
Drill Press	Casella CEL Dosimeter	MSC	72	4/30/2013	Pass
Vacuum	Casella CEL Dosimeter	MSC	86.8	4/30/2013	Hearing Protection Recommended
Saw	Casella CEL Dosimeter	MSC	97.4	4/30/2013	Fail, Hearing Protection Required
Cutting wood w/ Saw and Vacuum	Casella CEL Dosimeter	MSC	95	4/30/2013	Fail, Hearing Protection Required
Cutting PVC Pipe w/saw	Casella CEL Dosimeter	MSC	104	4/30/2013	Fail, Hearing Protection Required
Air Compressor (using air)	Casella CEL Dosimeter	MSC	92	4/30/2013	Fail, Hearing Protection Required
Air Compressor running	Casella CEL Dosimeter	MSC	85	4/30/2013	Pass
<u>OHC Basement, PC:</u>					
Near Elevator	Casella CEL Dosimeter	OHC	88-92	9/4/2013	Fail, Hearing Protection Required
Near Compressors	Casella CEL Dosimeter	OHC	90-93	9/4/2013	Fail, Hearing Protection Required
In between compressors	Casella CEL Dosimeter	OHC	95-97	9/4/2013	Fail, Hearing Protection Required
Middle of the basment	Casella CEL Dosimeter	OHC	89-92	9/4/2013	Fail, Hearing Protection Required
Back of the basment(near vent)	Casella CEL Dosimeter	OHC	91-93	9/4/2013	Fail, Hearing Protection Required
Near Electrical Closets	Casella CEL Dosimeter	OHC	89-92	9/4/2013	Fail, Hearing Protection Required

## APPENDIX W:

# Chemical Storage Classification

### Suggested Chemical Storage Pattern

There are many chemicals that are incompatible with each other. The common method of storing these products in alphabetical order sometimes results in incompatible neighbors. For example, storing strong oxidizing materials next to organic chemicals can present a hazard. A possible solution is to separate chemicals into their organic and inorganic families and then to further divide the materials into related and compatible families. Below is a list of compatible families. On the next page you will find this family arrangement pictured as shelf areas in your chemical stores area. The pictured shelf arrangement will easily enable you to rearrange your inventory into a safer and more compatible environment.

Inorganic	Organic
1. Metals, Hydrides	1. Acids, Amino Acids, Anhydrides, Peracids
2. Acetates, Halides, Iodides, Sulfates, Sulfites, Thiosulfates, phosphates, Halogens, Oxalates, Phthalates, Oleates	2. Alcohols, Glycols, Sugars, Amines, Amides, Imines, Imides
3. Amides, Nitrates (except Ammonium Nitrate), Nitrites, Azides	3. Hydrocarbons, Esters, Aldehydes, Oils
4. Hydroxides, Oxides, Silicates, Carbonates, Carbon	4. Ethers, Ketones, Ketenes, Halogenated Hydrocarbons, Ethylene Oxide
5. Sulfides, Selenides, Phosphides, Carbides, Nitrides	5. Epoxy Compounds, Isocyanates
6. Chlorates, Bromates, Iodates, Chlorites, Hypochlorites, Perchlorates, Perchloric Acid, Peroxides, Hydrogen Peroxide	6. Peroxides, Hydroperoxides, Azides
7. Arsenates, Cyanides, Cyanates	7. Sulfides, Polysulfides, Sulfoxides, Nitriles
8. Borates, Chromates, Manganates, Permanganates, Molybdates, Vanadates	8. Phenols, Cresols
9. Acids (except Nitric) (Nitric Acid is isolated and stored by itself.)	9. Dyes, Stains, Indicators
10. Sulfur, Phosphorus, Arsenic, Phosphorus Pentoxide	10. Organic miscellaneous
11. Inorganic miscellaneous	

### Notes

- If you store volatile materials (ether, hydrocarbons, etc.) in a refrigerator, the refrigerator must be explosion-proof. The thermostat switch or light switch in a standard refrigerator may spark and set off the volatile fumes inside and thus cause an explosion.
- This list is not complete and is intended only to cover the materials possibly found in an average school situation. This is not the only method of arranging these materials and is only offered as a suggestion.

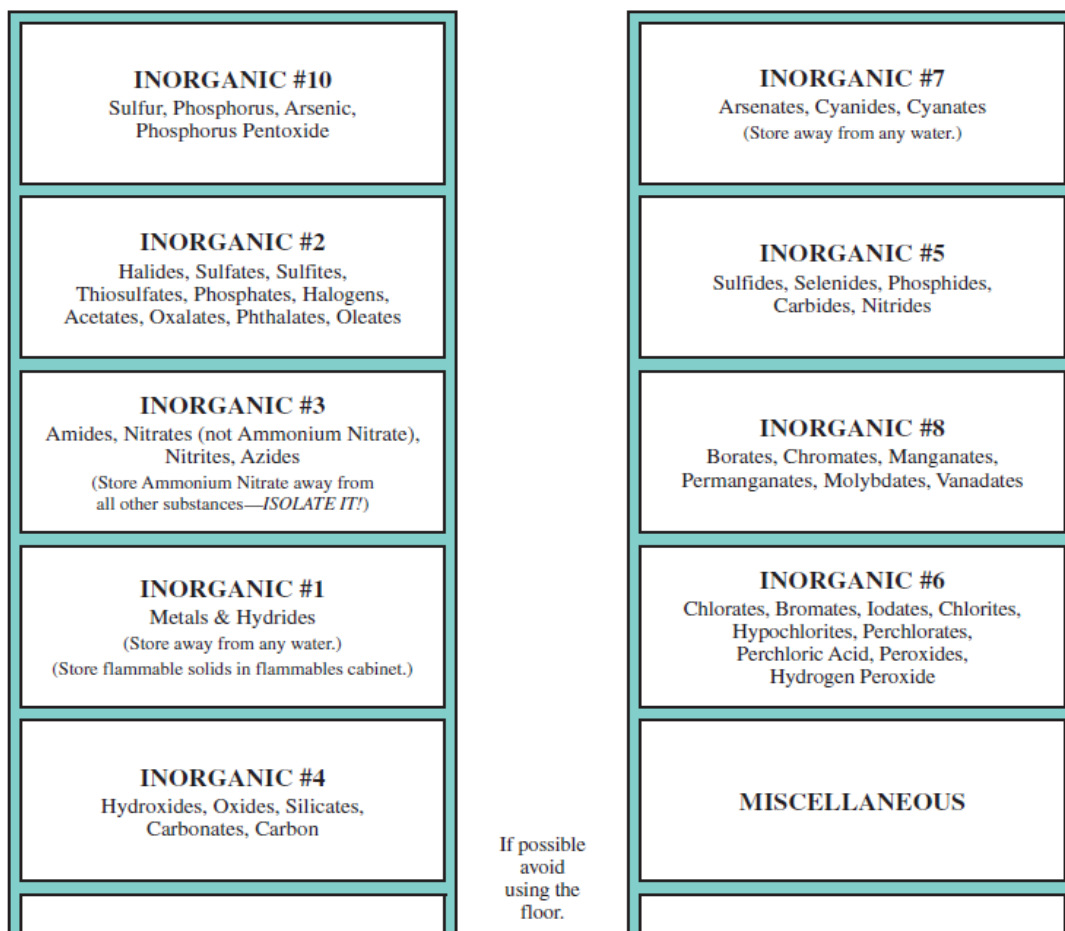
### **Flinn Compatible Chemical Family Codes**

When you assign compatible chemical family data you may wish to use the system created by Flinn. The family designations are listed below and in more detail on the following pages. Family designations for individual chemicals are found in the individual chemical listings of this Catalog/Reference Manual.

<b>Flinn Inorganic Compatible Family Codes</b>	<b>Flinn Organic Compatible Family Codes</b>
I1 – Metals, Hydrides	O1 – Acids, Amino Acids, Anhydrides, Peracids
I2 – Acetates, Halides, Iodides, Sulfates, Sulfites, Thiosulfates, Phosphates, Halogens	O2 – Alcohols, Glycols, Sugars, Amines, Amides, Imines, Imides
I3 – Amides, Nitrates (except Ammonium Nitrate), Nitrites, Azides	O3 – Hydrocarbons, Esters, Aldehydes, Oils
I4 – Hydroxides, Oxides, Silicates, Carbonates, Carbon	O4 – Ethers, Ketones, Ketenes, Halogenated Hydrocarbons, Ethylene Oxide
I5 – Sulfides, Selenides, Phosphides, Carbides, Nitrides	O5 – Epoxy Compounds, Isocyanates
I6 – Chlorates, Bromates, Iodates, Chlorites, Hypochlorites, Perchlorates, Perchloric Acid, Peroxides, Hydrogen Peroxide	O6 – Peroxides, Hydroperoxides, Azides
I7 – Arsenates, Cyanides, Cyanates	O7 – Sulfides, Polysulfides, Sulfoxides, Nitriles
I8 – Borates, Chromates, Manganates, Permanganates	O8 – Phenols, Cresols
I9 – Acids (except Nitric) Nitric Acid is isolated and stored by itself.)	O9 – Dyes, Stains, Indicators
I10 – Sulfur, Phosphorus, Arsenic, Phosphorous Pentoxide	OM – Miscellaneous
IM – Miscellaneous	

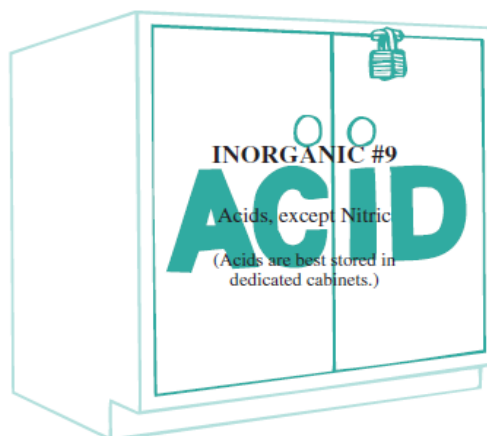


## SUGGESTED SHELF STORAGE PATTERN—INORGANIC



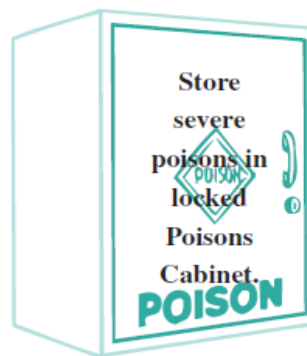
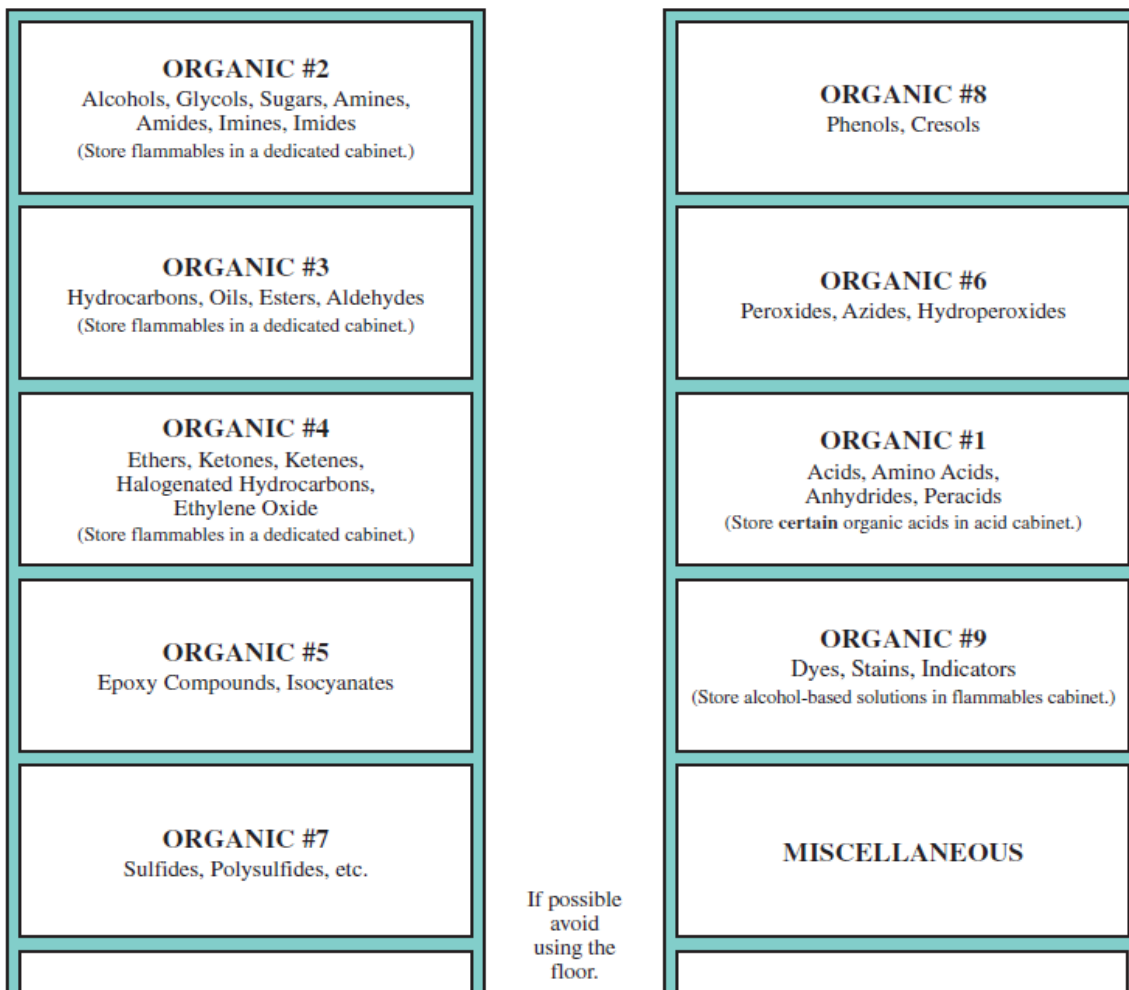
### Storage Suggestions

1. Avoid storing chemicals on the floor (even temporarily).
2. No top shelf chemical storage.
3. No chemicals stored above eye level.
4. Shelf assemblies are firmly secured to walls. Avoid island shelf assemblies.
5. Provide anti-roll-off lips on all shelves.
6. Ideally, shelving assemblies would be of wood construction.
7. Avoid adjustable metal shelf supports and clips. Better to use fixed, wooden supports.
8. Store acids in a dedicated acid cabinet. Store nitric acid in the same cabinet **only** if isolated from other acids. Store both inorganic and some organic acids in the acid cabinet.
9. Store flammables in a dedicated flammables cabinet.
10. Store severe poisons in a dedicated poisons cabinet.
11. Maximize Storage Space. If shelf space is a problem, you are permitted to place more than one compatible chemical family on a shelf. Make sure you either have a physical divider or leave a 3" space between each family. This will maximize your tight shelf space while keeping each compatible chemical family separate from one another.



Store nitric acid away from other acids unless your acid cabinet provides a separate compartment for nitric acid.

## SUGGESTED SHELF STORAGE PATTERN—ORGANIC



APPENDIX X:



**WAIVER RELEASE FORM**

The University of New England (UNE) seeks to ensure the health and safety of all participants in University sponsored events and activities. These activities are conducted under the supervision of UNE students, faculty or staff. Although UNE takes steps to ensure health and safety, no one can guarantee another's absolute safety.

In my/our capacity as **Self/Parent/Guardian of Person Below** acknowledged and agree as follows:

**ASSUMPTION OF RISK:** I/we understand that there are certain dangers, hazards, and risks inherent in participating in the on campus visit to UNE, which can cause or result in property damage or personal injury, including the potential for permanent paralysis and death. I further understand that the University cannot and does not assume responsibility for any such personal injury, death or property damage. Notwithstanding the dangers, hazards, and risks involved, and in consideration of participation in the programs, related events and activities, I agree and hereby do assume all risks surrounding participation of Child in the programs, related events and activities; and

**INDEMNIFICATION:** I/we further agree to indemnify and hold harmless UNE, its trustees, directors, officers, employees, instructors, staff and any students acting as employees from and against any claims, costs, expenses, damages, liabilities, judgments, or losses, of every kind or nature, including attorney's fees, asserted by any party, including Child, against UNE, its trustees, directors, officers, employees, instructors, staff and any students acting as employees arising out of, or in connection with, related events and activities, except to the extent of UNE's or its employees' or students' negligence.

**BEHAVIOR:** I/we understand and agree that participation in the programs, events and related activities is voluntary and that my child's behavior or that of my own must not interfere with or disrupt ongoing academic or research operations of the University and its faculty, staff and students. I further understand and agree that UNE, in its sole discretion, may remove my child or me from the program and premises. I further agree that Child must comply with the stated and customary terms and conditions for participation. If, however, I observe any unusual significant hazard during my presence or participation, I will remove Child and myself from participation and will immediately bring such hazard(s) to the attention of the nearest UNE employee or UNE student volunteer.

I have read and understand the conditions and procedures of this letter and I accept the conditions stated herein.

**NAME:** \_\_\_\_\_

\_\_\_\_\_  
**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

\_\_\_\_\_  
**Signature of Parent/Guardian (if Individual is under 18 years of Age)**