

NIAGARA UNIVERSITY

UNIVERSITY CHEMICAL HYGIENE PLAN

9/01/2010

The Chemical Hygiene Plan shall indicate specific measures that the University will take to ensure laboratory employee protection.

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CHEMICAL HYGIENE PLAN FOR NIAGARA UNIVERSITY**OVERVIEW**

The general intent and recommendations of the chemical hygiene plan (CHP) for Niagara University in accordance with 29 CFR 1910.145 App A(4), and OSHA 29 CFR 1910.1450 should be followed in academic teaching laboratories as well as by full-time laboratory workers and anyone involved in laboratory activities is:

To protect laboratory employees from health hazards associated with the use of hazardous chemicals in our laboratory. Skin contact with chemicals should be avoided as a cardinal rule.	29 CFR 1910.1450 App A (1), and 1910.1450 (e)(1)(i)
To assure that our laboratory employees are not exposed to substances in excess of the permissible exposure limits employees shall observe the PELs and TLVs set by OSHA. Avoid underestimation of risk. Provide adequate ventilation through use of hoods and other ventilation devices.	29 CFR 1910. 1450 App A (2) (3) (5), and subpart Z
Chemical Hygiene responsibilities rests at all levels. Niagara University's Chemical Hygiene Officer shall review and evaluate the effectiveness of the CHP at least annually and update it as necessary. Reviews shall include input from all pertinent personnel (i.e. facility services, health services, department dean and chairs.	29 CFR 1910.1450 App A (B), an 1910.1450 (e2)
The plan will be available to all employees for review and a copy will be located in the following areas: MyNU, Business Services, Dean of Arts and Sciences Office, and Department Chair offices	29 CFR 1910.1450(e2)
The laboratory facility should have appropriate general ventilation, stockrooms/storerooms, and hoods/sinks along with other safety equipment.	29 CFR 1910. 1450 App A - C1 (a), (b), (c), (d)

Note: The University does not work with level BCL-3 biohazards, and maintains facilities suited to handling biohazards classified as Level BCL-2 and below.

DEFINITIONS 29 CFR 1910.1450(b)

- 1) Laboratory – means a facility where the “laboratory use of Hazardous chemicals” occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a non- production basis.
- 2) Laboratory scale – means work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person.
- 3) Permissible Exposure Limits/Threshold Limits Values – For laboratory uses of OSHA regulated substances PELs/TVL, the employer shall assure that laboratory employees’ exposures to such substances do not exceed the permissible exposure limits specified in 29 CFR part 1910, subpart Z.

I. STANDARD OPERATING PROCEDURES (SOP)

29 CFR 1910.1450(e)(3)(i)

- Niagara University's Biochemistry, Chemistry & Physics Department and Biology Department's reference source for the SOP is the American Chemical Society handbook, *Safety in Academic Chemistry Laboratories* and the National Research Council's *Prudent Practices handling Hazardous Chemical in Laboratories*.
 - A) Volume 1 Accident Prevention for College and university Students
 - B) Volume 2 Accident Prevention for faculty and Administrators
 - C) *Prudent Practices for Handling Hazardous Chemicals in Laboratories* published in 1981 by the National Research Council.
- The SOP applies to all Niagara University employees and students using the laboratories and classrooms.
- It is the responsibility of the University and its employees to ensure that the educational programs and other activities protect and promote the health and safety of our students, our employees and the environment. Every effort is made to insure the safety and security of NU students, residents and employees.

II. CONTROL MEASURES TO REDUCE EMPLOYEE EXPOSURE TO HAZERDOUS CHEMICALS

29 CFR 1910.1450(e)(3)(ii)

The reduced exposure control measures shall be in effect for:

- LABORATORY HOODS: 29 CFR 1910.1450(e)(3)(iii)
 - 1 in Psychology
 - 4 hoods in Biology
 - 11 hoods in Chemistry
 - Calibrated annually (February) through a NSF accredited source.
 - Conforms to NSF49 and MFR specifications
- BIOLOGICAL SAFETY CABINETS, 29 CFR 1910.1450
 - 4 units with Biology Department (Rooms: 8, 13, 118)
 - Calibrated annually
 - Inspection sticker affixed on cabinets
- FLAMMABLE STORAGE CABINETS, Uniform Fire Code 79.201
 - The total quantity of flammable and combustible liquids in a laboratory or cabinet shall be no more than one 45 gallon capacity storage cabinet in any one room. Label storage cabinet with conspicuous RED lettering "Flammable-Keep Fire Away".
 - The quantity of Class I or Class II liquids shall not exceed the 45 gallon cabinet which is the standard at Niagara University for laboratory.
- GLOVE BOXES: Should be thoroughly tested for leaks before each use and there should be a method of monitoring the integrity of the system. *Prudent Practices*, 208
 - 1 unit in Biology, DePaul 133
 - 0 unit in Chemistry
- RESPIRATOR: 29 CFR 1910.134.

- This standard is filed in Business Services and at, http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=12716&p_table=standards
- Respirators for routine use should be inspected periodically by the Chemical Waste and Instrumentation Specialist
- Currently none are required for use in Niagara University Biology or Chemistry labs:
 - 1910.134(c)(2)(i) – An employer may provide respirators at the request of employees or permit employees to use their own respirators, if the employer determines that such respirator use will not in itself create a hazard.
 - 1910.134(c)(2)(ii) – Employers are not required to include in a written respiratory protection program those employees whose only use of respirators involves the voluntary use of filtering face pieces (dust masks) .
- PROTECTION APPAREL, 29 CFR 1910 subpart I
 - Appropriate protection apparel compatible with the required degree of protection for substances handled shall be used.
 - Employees shall use/wear glove, gown, eye protection, etc., use as identified in Niagara University SOP attachment A.
- EYEWASH: 29 CFR 1910.1450
 - Employees will be instructed on the location and use of eye wash stations and safety showers. The will provide annual training by Chemical Waste and Instrumentation specialist
- FIRE EXTINGUISHER: 29 CFR 1910.1450
 - Training will be provided through local fire department that shall come on campus annually to give hands on “live fire” extinguisher training. Annual training will be in September.
 - Trainees will include faculty, research students and DePaul employees

III. MAINTENANCE OF FUME HOODS AND OTHER PROTECTIVE EQUIPMENT

29 CFR 1910.1450(e)(3)(ii)

- A) FUME HOODS
 - Annually checked and calibrated by an outside accredited source.
- B) BIOLOGICAL SAFETY CABINETS are inspected annually
 - Reports of safety cabinet inspections are filed in Room 204
- C) VENTILATION OF STORAGE CABINETS will be evaluated at regular intervals
 - Reports of storage cabinets inspections are filed in Room 204
- D) INTERLOCKS ON HIGH VOLTAGE EQUIPMENT
- E) SAFETY SHOWERS will be tested by Facility Services to ensure the value is operable.
 - Reports of safety shower inspections are filed Room 204
- F) EYEWASH STATIONS will be inspected by the Chemical Waste and Instrumentation Specialist to ensure a soft stream or spray of water for an extended period.
 - Reports of safety shower inspections are filed Room 204

IV. EMPLOYEE INFORMATION AND TRAINING

29 CFR 1910.1450(e)(3)(iv), 29 CFR 1910.1450(f)

A) Each employee covered by the laboratory standard will be provided with information and training so that they are apprised of the hazards of chemicals present in their work area. This training will be given at the time of initial assignment and prior to new assignments involving different exposure situations. Refresher training will be given annually. 29 CFR 1910.1450(f)(1),(2)

B) The training 29 CFR 1910.1450(f)(4) / information 29 CFR 1910.1450(f)(3) sessions shall include :

A copy of the standard 1910.1450 shall be available to employees at departments	29 CFR 1910.1450(f)(3)(i)
The availability and location of the written chemical hygiene plan	29 CFR 1910.1450(f)(3)(ii) .
Information on permissible exposure limits (PELs) where they exist and other recommended exposure limits.	29CFR1910.1450(e)(1)(ii), (f)(3)(iii)
Signs and symptoms associated with exposure to hazardous chemicals in laboratories	29 CFR 1910.1450(f)(3)(iv).
Location of reference materials, including all MSDSs and on the safe handling of chemicals in laboratories	29 CFR 1910.1450(f)(3)(v).
Methods to detect the presence or release of chemicals (i.e., monitoring, odor thresholds, etc.).	29 CFR 1910.1450(f)(4)(i)(A)
The physical and health hazards of chemicals in laboratory work areas.	29 CFR 1910.1450(f)(4)(i)(c)

C) Measures to protect employees from these hazards including:

Standard operation procedures	Exhibit A, 29 CFR 1910.1450(e)(3)(i)
Work practices	Exhibit A
Emergency procedures	29 CFR 1910.1450(f)(4)(i)(C)
Personal protective equipment	29 CFR 1910.1450
Details of the chemical hygiene plan	29 CFR 1910.1450(e)(2)

D) Director of Contract Services & Risk Management is responsible for conducting the training sessions, which consist of program overview. An outline of the overview training program is in Appendix A.

E) Each employee will sign a form documenting that they have received training; this is found in Appendix A.

F) Director of Contract Services & Risk Management and CHP & Biohazard Safety committees are responsible for developing standard operating procedures. The Teaching Laboratory Supervisor/Instructor and the Chemical Waste & Instrumentation Specialist are responsible for the portion of the training on standard operation procedures.

V. PRIOR APPROVAL FOR SPECIFIC LABORATORY OPERATIONS

Approval to work with sufficiently hazardous substances include select carcinogens, reproductive toxins, and chemicals with high acute toxicity will be review and verified annually by department chair. 29 CFR 1910.1450(b), (e) (3)(viii).

Department Chair must be provided a copy of all chemicals ordered to maintain the integrity of the ongoing Chemical Inventory Management.

VI. MEDICAL CONSULTATION AND EXAMINATION

29 CFR 1910.1450(g)

- A) Whenever an employee develops signs and symptoms associated with a hazardous chemical to which he/she may have been exposed, the employee shall be provided an opportunity to receive appropriate medical examination. 9 CFR 1910.1450(g)(1)(i)
- Refer to 29 CFR part 1910, subpart Z for permissible exposure level (PEL)
- B) When exposure monitoring reveals an exposure level routinely above the action level (AL) or in the absence of an action level, exposure above the PEL for regulated substances for which there are medical monitoring and medical surveillance requirements, medical surveillance shall be established for that employee. 29 CFR 1910.1450(g)(i)(ii)
- C) All medical examinations and consultations shall be performed by or under the direct supervision of a licensed physician and shall be provided without cost to the employee, without loss of pay and at a reasonable time and place. 29 CFR 1910.1450(g)(2)
- D) Currently Niagara University uses:
- Mount St Mary's hospital, 5300 Military Rd., Lewiston NY 14092
 - Niagara Falls Memorial Medical Center, 501 Tenth St., Niagara Falls, NY 14301

E) An authorized Niagara University representative will provide the following information to the physician:

Identity of the hazardous chemical to which the employee may have been exposed	29 CFR 1910.1450(g)(3)(i)
A description of the conditions of the exposure including exposure date if available.	29 CFR 1910.1450(g)(3)(ii)
A description of signs and symptoms of exposure that the employee is experiencing. (If any)	29 CFR 1910.1450(g)(3)(iii)

F) The written opinion that the employer receives fro the physician shall include:

Recommendations for future medical follow-up	29 CFR 1910.1450(g)(4)(i)(A)
Results of examination and associated tests.	29 CFR 1910.1450(g)(4)(i)(B)
Any medical condition revealed which may place the employee at increased risk as the result of a chemical exposure.	29 CFR 1910.1450(g)(4)(i)(C)I
A statement that the employee has been informed by the physician of the results of the examination /	29 CFR 1910.1450(g)(4)(i)(D)

consultation and told of any medical conditions that may require additional examination or treatment.	
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G) The material returned to Niagara University by the physician shall not include specific findings and diagnosis which are unrelated to occupational exposure. 29 CFR 1910.1450(g)(ii)

VII. RESPONSIBILITIES UNDER THE CHEMICAL HYGIENE PLAN

29 CFR 1910.1450 Section E

A) Chemical Hygiene Officer, 29 CFR 1910.1450(b), (e)(3)(vii)

- The Contract Services and Risk Manager is designated as the Chemical Hygiene Office for Niagara University responsible to train employees on the applicable details of the written CHP. 29 CFR 1910.1450(b),(f)(4)(ii)
- The committee consists of: Dean, Department Chair, Director of Contract Services and Risk Manager, Faculty and Student representative, Chemical Waste and Instrumentation specialist, Teaching Laboratory Supervisor and Instructor and Executive Vice President/Vice President for Academic Affairs
- Meetings will take place semi-annually within department and with Chemical Hygiene Officer.

B) National Research Council Recommendations Concerning chemical Hygiene in Laboratories” *Prudent Practices” in parentheses* suggested training topics:

Accidents, spills (33,172)	Housekeeping (21, 24, 171)	Vigilance (22)
Avoidance of routine exposure (23)	Mouth suction (23,32)	Waste Disposal (14,238,241)
Choice of Chemicals (13)	Personal Protection (156,160,162)	Unattended operations (27) / Working Alone (28)
Eating, drinking, smoking (22,24,32,40,226)	Personal apparel (23, 158-161)	Handling of chronically toxic substances (10, 37, 39, 47 & 55)
Equipment and glassware (25)	Planning (22,23)	Labels (27)
Exiting (23)	Responsibility for Lab Safety (6)	Transport (223, 244)
Horseplay(23)	Use of hood (200)	Facilities (12)

C) Section F of Appendix A of 1910.1450 with coordination “*Prudent Practices” in parentheses* identifies these additional safety recommendations:

Corrosive Agents (35-36)	Pressurized and vacuum operation (27, 75-101)
Electrically powered laboratory apparatus)179-192)	Temperature procedures (26, 88)

VIII. PROVISIONS WORKING WITH PARTICULARLY HAZARDOUS SUBSTANCES

29 CFR 1910 (e) (3) (viii)

- Designated/ Control Area (48) – All experiments with and transfers of such substances or mixtures containing such substances should be done in a controlled area. Note: a controlled area as defined by the National Research Center is a laboratory, a portion of a laboratory, or a facility such as an exhaust hood or a glove box that is designated for the use of highly toxic substances.
- Containment Devices (48) – Any volatile substances having high chronic toxicity should be stored in a ventilated storage area in a secondary tray or container. All containers/areas should have a warning such as the following: WARNING! HIGH CHRONIC TOXICITY OR cancer-suspect agent. Access shall be limited
- Safe removal of Contaminated Waste (50) – Transfer of contaminated wastes should be done under the supervision of authorized personnel and in such a manner as to prevent spill or loss.
- Decontamination Procedures (50) – If chemical decontamination is to be used, a method should be chosen that can reasonably be expected to convert essentially all of the toxic materials into nontoxic materials. In the event that chemical decontamination is not feasible, wastes and residues should be placed in an impervious container that should be closed and labeled.

LABORATORY STANDARD OPERATING ACCIDENT PREVENTION PROCEDURES

When thinking about your particular laboratory situation in terms of your personal safety practices. Ask yourself 4 simple questions:

- What are the hazards?
- What are the worst things that can happen?
- What do I need to do to be prepared?
- What are the prudent practices, protective facilities and protective equipment needed to minimize the risks?

1. ACCIDENT PREVENTION FOR FACULTY AND ADMINISTRATORS

Safety in Academic Chemistry Laboratories Volume 2

- Regular safety inspections at intervals of no more than three months (and at shorter intervals for certain types of equipment, such as safety showers and eyewash fountains).
- Regular monitoring of the performance of equipment and ventilation systems
- Procedures that ensure proper disposal of waste chemicals
- Academic institutions have a moral and professional responsibility to train students in safe laboratory practices
- **STUDENTS ARE EXPECTED TO COMPLY WITH THE LOCAL ACCIDENT-PREVENTION RULES.**
- Building access after hours requires buddy-system and authorization by department chair.

2. ACCIDENT PREVENTION

ACS Section 1

- The faculty and staff of the Biology and Biochemistry, Chemistry & Physics departments are responsible for administering the accident-prevention program.
- Instruction shall include use of Material Safety Data sheets (MSDSs) and compliance with the OSHA Laboratory Standard, 29 CFR 1910.1450
- The faculty and staff should make every effort to be in the laboratory and or be accessible during the entire laboratory period for undergraduate-level course, including so-called “undergraduate research” laboratory work.
- Students should not work alone, particularly after hours, on operations involving hazardous chemicals. If after hour work is required, it should only be done with expressed knowledge of faculty instructor and authorized by Chair.
- Faculty and staff shall wear appropriate protective equipment and ensure students do as needed
- Maintain good laboratory practices
- Regularly supervised scheduled safety inspections of the laboratory facilities, including unoccupied areas and storerooms records shall be kept for at least 5 years. General improvements should be noted.
- All accidents and near-misses shall be reported with the CHP director, department chair, and dean’s office.
- When a student causes an accident or a near-miss, it is educationally useful to require a written report from the student
- Minimize storage of chemicals in laboratories.

- Reduce the number and quantity of chemicals that need to be stored to a reasonable minimum
- As mandated by OSHA and NFPA keep only minimum quantities of flammable liquids in the laboratory for current work. Per local fire marshal flammable liquids should not exceed 10 gallons per laboratory

3. PERSONAL PROTECTIVE EQUIPMENT

ACS Section 2

- Appropriate eye protection for faculty, staff and students includes safety glasses or goggles and face shields
- Protective clothing shall be worn by faculty, staff and students to minimize the chance of spilled chemicals coming into contact with skin.
- Annually, as safety briefing shall be given to students on the location of and how to operate the fire exits, telephones and alarms in use during regular school hours as well as after-hours. Training shall be done by the Chemical Waste & Instrumentation Specialist
- Label all chemicals with the date of receipt and the date of initial opening.
- Undergraduate and beginning graduate students in laboratory research studies should be closely supervised. The faculty and staff must ensure that appropriate personal protect equipment precautions are used.

4. MATERIAL SAFETY DATA SHEETS (MSDSs)

ACS Section 4, 5, and 6

- MSDSs shall be readily available for every hazardous chemical on the premises to students, faculty, and staff.
- MSDS can be stored in databases, provided that workers can readily access them.
- Although OSHA has no authority to require student training on hazardous chemicals, faculty can take advantage of valid MSDS to train students in descriptive and theoretical chemistry as well as accident prevention.
- The Chemical Waste & Instrumentation Specialist shall maintain a file in room DePaul 204 of all MSDSs in case of a medical emergency

5. REDUCING HAZARDS

ACS Section 7

- One of the best ways to lessen the intensity of any hazardous condition is to reduce the on-hand quantity of chemicals.
- Assign categories of risk to some or all chemicals as indicated by Sigma
- Run “what if” evaluations hazard and operability studies
- Only limited quantities of flammable liquids and solids (10 gallon limit) should be permitted on open shelves in the laboratory, and the containers should always be stored overnight in a storage cabinet approved for flammables.
- Keep explosive substances and mixtures well away from other laboratory workers.
- Both in the laboratory and in storage keep such explosive substances well separated from other unstable compounds, flammables and toxins.
- OSHA regulations require that all electrical outlets have a ground connection for use only with three-pronged plugs.

- All faculty and staff should know the location of circuit breakers and how to cut off all electrical service in case of fire or accident.
- It is both reasonable and prudent to ensure that the maximum concentrations of hazardous vapors, dusts, and mists are kept well below the limited concentrations as established by PEL and TLV.
- When a student enrolls in a laboratory course using a reproductive toxin they should be advised to consult their parents or guardians, their physicians, and then be given the opportunity to withdraw from the laboratory course without penalty.
- Use lined gloves when washing glassware or any equipment that could easily produce sharp edges from mishandling or breakage.
- Concentrated peroxide handling, storage, and disposal deserve careful attention.
- Keep on hand no more than a short-term supply of any concentrated peroxide, and check the containers at regular intervals.
- Inorganic peroxy compounds must be stored, handled, and used with caution.
- Limit the stock of any peroxide formers or precursors to a three-month supply or less
- Dispose of any stock remaining, unless it has been tested, and found to be peroxide-free.
- Never flush organic peroxides down the drain.

6. FACILITIES AND EQUIPMENT

ACS Section 8

- Keep aisles, exits, and the areas around safety showers, eyewash fountains, and fire extinguishers clear at all times.
- Use stockroom or chemical storage room spaces for storage of chemicals longer than a few days
- NFPA 45 mandates maximum quantities and maximum container sizes for flammable and combustible liquids to be used or store in laboratories.
- The ANSI standard requires that safety showers and eyewash fountains be activated weekly to ensure that they are working properly. Record of testing should be affixed to the shower plumbing via a tag.
- Fire extinguishers in the laboratory should be the appropriate type for the expected fire emergency.
- Users of hoods should ensure that both the rear ducts and front airfoils of the laboratory hood they are using are free and clear of all obstructions.
- At regular intervals, inspect the condition of the laboratory hoods, and check for functioning of the ducts and associated exhaust system.
- Do not use laboratory hoods for storing chemicals or apparatus.

7. INVENTORY MANAGEMENT, STORAGE, AND DISPOSAL

ACS Section 9

- Ensure that security procedures are adequate to prevent unauthorized access to stored chemicals.
- Never store anything on the floor, even temporarily; containers of chemicals belong on shelves and benches.
- Chemical storage rooms and buildings must try to ventilate room by having door vents.
- Every attempt shall be made that chemical storage room should have at least two exits.
- Never use household refrigerators for chemical storage of any kind.
- Refrigerators shall clearly be labeled NO FOOD or DRINK

8. VIOLATIONS AND EMERGENCY REPORTING

Any person who observes a violation, or potentially dangerous situation, related to material and operations covered by plan should notify:

- Violation or Potentially Dangerous Situation:
 - Risk Management (Chris Ferguson) at 286-8345
 - Immediate danger: Campus Safety at X8111
- Violations by students shall be reported to the Dean of Students for appropriate action.
- Violations by staff shall be reported to the appropriate supervisor.
- Violations by faculty shall be reported to the appropriate department Chair and Dean of the College of Arts & Sciences.

***NO LESSON IS SO IMPORTANT AND NO TASK SO URGENT THAT WE CAN
NOT TAKE TIME TO TEACH, LEARN, AND PRACTICE SCIENCE SAFELY***

Training Certification Sheet

I, [_____], hereby certify that I have undergone the training overview regarding the materials in Appendix “A” of the Niagara University Chemical Hygiene Plan, that I have understood the materials presented, and that if at any point I have a question, concern, or suggestion regarding the

Niagara University Chemical Hygiene Plan, I will direct it to either the CHP or Biohazard committees, or the Director of Contract Services Risk Management.

SIGNED: _____

DATED: _____

ATTACHMENT B

A. Biology Department

1. DePaul 7
2. DePaul 115
3. DePaul 118
4. DePaul 121

B. Chemistry Department

1. Instrumental Laboratory - DePaul 202
 - a.) 1 - Fume Hood located in the south/east corner of the lab.
2. Biochemistry Laboratory - DePaul 203
 - a.) 1 - Fume Hood located in the north/east corner of the lab.

3. General Chemistry Laboratory - DePaul 210
 - a.) 1 - Fume Hood located toward the middle of the west wall of the lab.
4. Analytical Laboratory - DePaul 213
 - a.) 1 - Fume Hood located at south/east corner of lab.
5. Organic Laboratory - DePaul 224
 - a.) 2 - Fume Hoods located toward the middle of the east wall of the lab.
6. Organic Research Laboratory - DePaul 225
 - a.) 1 - Fume Hood located on the north/east wall of the lab.
 - b.) 2 - Fume Hoods at the north end of the lab benches on the west side of the lab.
 - c.) 2 - Fume Hoods at the north end of the lab benches on the east side of the lab.

ATTACHMENT C

LABORATORY SAFETY RULES AND PROCEDURES AGREEMENT

To ensure that the experiments performed are safe, positive learning experiences, students should read, discuss and sign this laboratory safety rules and procedures agreement. The student and laboratory instructor should each keep a copy of the signed agreement and the original should be filed with the Director of Laboratories. Violations of this agreement, and any other conditions of working in the lab, may be both addressed by the Instructor, lab staff, and Campus Safety, as well as referred to the Dean of Students as a violation of Niagara University's Disciplinary Rules (see: Student Handbook).

1. Any laboratory can be a dangerous place. Many compounds are volatile and flammable or explosive while others are toxic. Some chemicals can cause lung damage, some can cause chemical burns, some can lead to cirrhosis of the liver and others are carcinogenic (cancer causing). Yet, chemists generally live as long as the rest of the population. They simply learned to be careful in the hazardous laboratory environment. **The first thing on your mind when you come to the laboratory should always be safety.**
2. Safety precautions in the laboratory are nothing more than common sense. **Always expect the unexpected.** Never work alone in the laboratory. Only authorized experiments can be performed. Deliberately creating a hazard will result be met with severe consequences on the first offense.
3. **White lab coats and safety goggles or glasses should be worn at all times in the laboratory. Although it is permissible, the use of contact lenses is not recommended in Chemistry labs.** Users of contact lenses should be aware that some vapors may be absorbed by the lens and could cause damage to the cornea. Contact lens wearers that own glasses should strongly consider wearing them.
4. Memorize the location of the following in the laboratory.
 - a. Fire extinguishers and Fire blankets (if available)

- b Eye wash fountains
 - c. Emergency showers
 - d Location of all exits.
5. **Students with long hair** must secure it for the duration of the experiment. Avoid wearing scarves in the laboratory.
 6. Clothing should not be loose and floppy, especially in the sleeves. Avoid wearing highly flammable synthetic fabrics. Never wear short skirts, shorts, or bare-midriff shirts in the laboratory. Arms and legs should be covered.
 7. Wear leather shoes, or other footwear constructed with thicker upper material, that covers the entire foot. **Open-toed shoes, sandals and high heeled shoes** as well as thin canvas sneakers, are not permitted in the laboratory.
 8. **Smoking, chewing gum, eating or drinking is not allowed in the laboratory**, since you may inadvertently ingest some chemical substance. Your hands may be contaminated with an unsafe chemical. **Always wash your hands before you leave the lab.** Do not place any object, including pens or pencils, in your mouth during or after the laboratory period. These objects may have picked up a contaminant from the laboratory bench. Never sniff, inhale, or taste chemicals.
 9. Always use the smallest amount of substance required for an experiment; more is never better in chemistry. **Never return unused portions of a reagent to the original reagent bottle.**
 10. **Never remove any chemical substance from the laboratory.** Removal of chemicals from the laboratory is grounds for severe disciplinary action.
 11. Chemicals should not be stored in your laboratory drawer or area unless you are specifically directed to do so by the instructor.
 12. **Keep your work area clean**, and help keep the common areas of the laboratory clean. If you spill something in a common area, remember that this substance may injure someone else.
 13. **In the case of any spill (including water):**
 - Alert your neighbors and the laboratory instructor immediately
 - Clean up the spill as directed by the instructor
 - If the substance is volatile, flammable or toxic, warn everyone of the accident.If necessary help will be called in to clear up the spill.
 14. **Avoid fully inhaling the vapors of any substance.** Make use of the fume hoods when using concentrated acids or substances with strong aromatic vapors.
 15. **When heating liquids**, always add 2-3 boiling stones to make the boiling action smoother.
 16. Never add water to a concentrated reagent when diluting the reagent. **Always add the reagent to the water.** If water is added to a concentrated reagent, local heating and density effects may cause the water to be splashed back.
 17. **Never work in the laboratory unless the instructor is present.** Report to the Director of Laboratories if your instructor is not present during your assigned lab time.
 18. **Dispose of all reaction products as directed by the instructor.** Observe carefully the special disposal techniques necessary for flammable or toxic substances. The inappropriate disposal of chemicals may have a significant effect on our environment, both within the Lab building and around Niagara Falls.

19. **All broken glass products** should be disposed of in the special labeled container provided in the lab. Clean up broken glass immediately or as soon as safely possible, depending on the situation.
20. **Inform yourself of the hazards of the materials with which you are working.** They are accessible through the Web at <http://physchem.ox.ac.uk/MSDS/> or <http://www.chem.uky.edu/resources/msds.html> .
21. **List your allergies at the bottom of this page.** If the experiment deals with something to which you are allergic, consult with your instructor.
22. **Never fool around or play games with chemicals in the laboratory.** Always remember that chemical laboratories are hazardous environments and although every precaution will be taken by your instructor for your protection, you bear the ultimate responsibility for safety in the laboratory. A little carelessness could leave you or other students disabled for life.

I, _____ have read, understand and agree to follow these laboratory safety rules and procedures. I agree to abide by any additional instructions, written or verbal, provided by laboratory instructor. I realize that my failure to follow these rules and instructions may result in serious disciplinary action.

Student's Signature

Date

*** List any allergies or medical problems that your instructor should be made aware of. Students may also wish to ensure Niagara University Health Services is given this information.**

1/30/2012

POLICY

SUBJECT: CHEMICAL HYGIENE PLAN CONTROL MEASURES TO REDUCE EMPLOYEE EXPOSURE TO HAZARDOUS MATERIALS

Niagara University's Chemical Hygiene Plan (CHP) is applicable to all laboratory functions and other facilities that handle hazardous material or waste.

COVERAGE:

This policy and procedure pertains to all faculty, non-bargaining hourly, professional and administrative employees as well as onsite contractors and visitors, whose work or activities may occur in campus facilities or campus property.

OBJECT:

Niagara University is required to advance laboratory safety practices by the Occupational Safety and Health Administration (OSHA) Laboratory standards code, 29 CFR 1910.1450, Appendices A, B and Subpart Z. Section 1910.1450 (e)(1) directs where hazardous chemicals as defined by this standard are used in the workplace, the employer shall develop and carry out the provisions of a written Chemical Hygiene Plan.¹

This code covers all workers using hazardous chemicals in laboratories. "Laboratory use" means performing chemical procedures using small quantities of hazardous chemicals on a laboratory scale and not as part of a production process in an environment where protect laboratory practices and equipment are in common use.² Laboratory means a facility where the "laboratory use of hazardous chemicals" occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a non-production basis.³

Other sources used in developing this policy and procedure include National Research Council's 1981 publication of *Prudent Practices for Handling Hazardous Chemicals in Laboratories*, and the American Chemical society publication *Safety in Academic Chemistry Laboratories* 7th edition.

The objective of this policy is:

1. Inform laboratory/classroom users about CHP mandated requirements of a Standard Operating Accident-Prevention Procedures applicable to employees, students, and visitors to limit exposure to health hazards they may encounter in the laboratory/classroom areas.
2. Define after-hour access by students and faculty of DePaul Hall
3. Compliance with federal, state and local regulations regarding the handling of hazardous material in campus facilities.

The consequences of demonstrated neglect or unwillingness to perform the duties in accordance with this established policy and procedure can be very severe for both the university and for the individual involved. The university as a whole and each of us individually has a responsibility to support and follow the procedures outlined in the Chemical Hygiene Plan.

¹ OSHA fact sheet

² OSHA fact sheet

³ 29 CFR 1910.1450 (b)

PROCEDURE 1

PROCEDURE: CHEMICAL HYGIENE PLAN AND STANDARD ACCIDENT PREVENTION OPERATION PROCEDURES

<u>RESPONSIBILITY</u>	<u>ACTION</u>
Executive Vice President/Vice President for Academic Affairs	<ul style="list-style-type: none"> • Must establish and maintain an effective written accident-prevention program. • Appoint a Chemical Hygiene Officer (CHO)
Director of Contract Services & Risk Management/Chemical Hygiene Officer (CHO)	<ul style="list-style-type: none"> • Shall advise and assist administrators, faculty, and staff on safety directives and accident prevention. • Shall chair Chemical Hygiene Plan committee • Shall set up and supervise regularly coordinate safety inspections of campus laboratory facilities, unoccupied areas, and storerooms where hazardous material is located. • Inspections will be documented and maintained for 5 years.
Chemical Hygiene Plan Committee	<ul style="list-style-type: none"> • Are responsible for administering and abiding by the standard operating accident-prevention procedures as developed by the CHO and the CHP committee. • Shall submit known violations of CHP, Standard Operating Accident Prevention Procedures, and other hazardous incidents to Department Chair and CHO.
Faculty and Staff	<ul style="list-style-type: none"> • Shall notify CHO of known hazard or safety condition.
Chemical Hygiene Officer	<ul style="list-style-type: none"> • Will investigate reported hazard or safety incident. • If student related incident contact Dean of Student Affairs for corrective action. • Depending on severity or hazard or safety condition will contact other campus resources to correct. • Submit corrective action recommendations to Dean of Arts and Sciences and Vice President of Academic Affairs.

PROCEDURE 2

PROCEDURE: AFTER-HOUR ACCES TO DePAUL HALL

<u>RESPONSIBILITY</u>	<u>ACTION</u>
Department Chair	<ul style="list-style-type: none">• Post department normal operating hours and after hours building access at the start of academic year.• Submit names of students, including “buddy” names, requiring access to DePaul Hall after-hours to Department Chair.• Reviews and approvals final list, and send copy to faculty, department secretary, and Campus Safety.• Notifies student and buddy students access is approved.• Logs in student name, buddy name, and time of request for access to DePaul Hall after-hour
Faculty	
Department Chair	
Faculty	
Campus Safety	

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