Department Laboratory Safety Plan (DLSP)

A SAFETY MANUAL DESIGNED TO SUPPLEMENT THE COLBY COLLEGE LABORATORY SAFETY PLAN (LSP)
STUDENTS IN THE CASE OF AN EMERGENCY:

- If you are in immediate danger such as a fire, or large chemical spill, pull the fire alarm, evacuate the area and building, and call Security at Extension 5911, (859-5911 from a mobile phone), from a safe location. Locate the members of your lab personnel outside at a prearranged meeting space.
- Notify your instructor or supervisor if not in immediate danger. Phone numbers for people responsible for the room are listed on the door signs outside of each lab. DO NOT LEAVE THE AREA UNTIL HELP ARRIVES.
- Never attempt to handle an emergency or a spill. Notify the responsible PI, and Security at extension 5911 (859-5911 from a mobile phone).
- DO NOT attempt to handle any unplanned or emergency situation that make you feel uncomfortable, and puts you at risk. Please, evacuate the area and call for immediate assistance (use information on door signs).
- THE COLBY EMERGENCY CAMPUS SIREN: If you hear the alarm siren atop the Mudd building sound, listen for and follow any verbal instructions given at the end of the tone. If you cannot clearly understand the instructions, go to the Colby College homepage (www.colby.edu) and follow the instructions given there.
- When the Health Center (HC) is open, all students with minor/moderate injuries should go to the HC for evaluations. The HC is open 8-8 Monday-Friday and 12-8 Saturday-Sunday.
- Off hours or for more serious injuries should go to the ER for evaluation either transported by Security or if need be by City ambulance.
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1. **Purpose**
The Departmental Laboratory Safety Plan (DLSP) works in conjunction with and supplements the existing campus-wide Laboratory Safety Plan (LSP) that lists the general requirements to work in any academic lab at Colby College. The DLSP addresses the specific safety and chemical management risks and requirements that are only encountered and mandated when working in Chemistry Department Labs. The DLSP has been developed and reviewed by the Chemistry Faculty and the Colby College Chemical Hygiene Officer.

2. **SCOPE**
The requirements of this DLSP apply to all faculty, staff, visitors, students, and student employees that work, whether for academic credit or for employment, in the Chemistry Department laboratory facilities at Colby College.

3. **REFERENCE DOCUMENTS**
   b. OSHA, Occupational Exposure to Hazardous Chemicals in Laboratories, 29 CFR 1910.1450
   c. Colby College Laboratory Safety Plan (LSP)

4. **RESPONSIBILITIES**
   Responsibilities for oversight, implementation and maintenance of the Chemistry DLSP are assigned below. Identified personnel may designate tasks assigned to them to a qualified employee, student or consultant, as appropriate.

4.1. **Chemical Hygiene Officer (CHO):**
   The Academic Environmental Safety Specialist will oversee the plan and act as the CHO. Responsibilities of the CHO include the following:
   - The CHO will consult with the Chemistry Department faculty and staff to maintain and revise the DLSP annually by reviewing, creating, and revising safety rules and regulations based on risk assessments, incidents and near misses, and new hazardous procedures introduced by new faculty members or changes in faculty research projects,
   - Annual update of the emergency contact information, standard operating procedures (SOP) and hazard information forms (HIF) included as door signage on every working laboratory, prep room, inventory and storage door in the Chemistry Department,
   - Organize and implement the Colby College Moodle Online Safety Training Course and the Chemistry Departmental Safety Training Course for all students working with chemicals in the Chemistry Department, not including students enrolled in general chemistry courses.
• Organize and update the Keyes Building, Keyes Inventory Room 6 and the Keyes Outside Flammable Storage card access permissions for students that are currently working in the department, completed all safety training and have signed the safety agreement,

4.2. Chemistry Departmental Chairperson:

The department chairperson will assume overall responsibility for maintaining the Department specific DLSP. Additional responsibilities of the department chairperson include the following:

• Support the CHO in the implementation of the DLSP,
• Verify that all PIs in the Department are familiar with the contents of the LSP and department specific DLSP,
• Provide budgetary support to ensure compliance including adequate personal protective equipment and third party training if required,
• Serve on the Lab Safety Committee,
• Appoint a Departmental Safety Coordinator.

4.3. Principal Investigator (PI)/ Laboratory Supervisor:

• The PIs/staff member will support the CHO and department chairs in the implementation of the LSP and DLSPs.
• Contact the CHO to report revisions to laboratory facilities or procedures and will work directly with the Departmental Chairperson and/or the Departmental Safety Coordinator to ensure revision of the DLSP.
• Faculty are directly responsible for enforcing safety policies in their laboratories and field sites. This includes confirmation that visitors, students, staff, and faculty have received the required safety training, are following safe laboratory/field procedures as described in the LSP/DLSP, are trained in the proper operation of instrumentation and scientific apparatus used in their work, understand the specific hazards of their substances and procedures used in their laboratory/field work, and are disposing of wastes properly.
• Provide sufficient oversight of their laboratory and field sites so that safety policies are consistently followed.
• In the event of either a chemical spill or an accident that results in human injury, fire, or physical damage, the laboratory/field site supervisor must complete a spill or accident report form within 24 hours and submit it to the chemistry safety office liaison, who will send it to the CHO and/or the EH&S Director.
• Supplemental to our departmental safety training, faculty are responsible for implementing and enforcing the Laser, Radiation and Biohazard Safety Training programs, under the direction of the CHO, when students use these procedures in the laboratory.
4.4. Chemistry Departmental Safety Coordinator:

The Chemistry Department Safety Coordinator will act as a liaison between the department(s) and the Safety Committee. Responsibilities include:

- Assist the CHO with the annual revision of the DLSP,
- Work with the departmental chairperson to ensure LSP/DLSP compliance,
- Serve on the Lab Safety Committee

4.5. Chemistry Laboratory Personnel (includes faculty, staff and students):

- New faculty and staff are required to complete safety training designed by the CHO. All faculty and staff are urged to attend the Chemistry Department safety training.
- Students are required to complete the safety training designed by the CHO and the departmental safety training outlined by the Departmental Safety Coordinator. The departmental safety training will reinforce the safety procedures outlined in the DLSP and the location and use of safety equipment. Students are required to complete the training and sign an acknowledgement or training form that assures that they understand and agree to follow the LSP and the Chemistry DLSP prior to working independently with chemicals in a laboratory.

(LSP, APPENDIX D).

5. LAB SAFETY REQUIREMENTS

The following includes basic guidelines for maintaining a safe working environment in all Chemistry Department laboratories at Colby College.

5.1. Chemistry Faculty/Staff Teaching Laboratory Safety Requirements:

5.1.1 If an instructor must leave the building or is not readily available to the students in a laboratory for an emergency situation, another faculty or teaching staff member must be contacted to cover the laboratory. This policy covers all 100 and 200 level courses and 300 level courses that include non-chemistry majors. Advanced course laboratories that service only students who have completed laboratory safety training are not subject to this policy, provided the students agree to the “buddy system”. The instructor must be available until all of the students have finished working. Working in an office is allowable as long as the students can easily find the instructor in the case of an emergency; however, the instructor must periodically check the students in the lab.

- Departmental safety training and the buddy system is always required for independent research students.
- Student assistants do not qualify to cover a laboratory section in the absence of the faculty or teaching staff member.
- Instructors often work with students in the Instrument lab (Keyes 203). The instructor needs to inform the student assistant and the students that they will
be in K203. The student assistant must cover the laboratory until the return of the instructor.

- This policy is necessary to the end of the laboratory section, even if the laboratory runs longer than the scheduled time. Including clean up time, computer and discussion time. This policy is necessary when not doing wet chemistry if chemicals are readily available anywhere in the lab.

- Quick restroom breaks or office trips to “get something” do not require extra coverage.

5.2. Requirements for the Buddy System:

5.2.1. Day or night, students are not permitted to work alone in Colby Chemistry labs while using hazardous materials or performing hazardous procedures. A partner must be within earshot, (a minimum of the same building and same floor), and must be aware of what to do in the case of an emergency.

5.2.2. If no partner is available after hours (between 9 pm and 6 am), authorized students must call Security if they have to work in a Chemistry Department Lab. The dispatcher will note the time of the call, the building and room number and a phone number where the student is working. The student is required to call Security if they are working longer than 20 minutes and when they are finished and leaving the lab. Security will take appropriate action and attempt to call the student if more than the 20 minutes has elapsed. If the student has left the lab without contacting Security, disciplinary action will be taken and/or after hours work privileges will be revoked. Noncompliant students found working after hours will be asked to leave the building, and the departmental chair will be notified.

5.2.3. If a student wishes to study and/or work in a laboratory where no hazardous substance or procedure is involved anywhere in the laboratory, the student may do so at any hour of the day without a partner, but the student must abide by the general safety rules outlined in the LSP/DLSP.

5.3. Prep Room Requirements:

5.3.1. Prep rooms are working labs. Students employed to help prepare solutions and instrumentation for Chemistry courses must follow all safety procedures outlined by the LSP and DLSP. The faculty member teaching the course is responsible for the supervision of this student.

5.4. Requirements for Personal Protective Equipment (PPE):

5.4.1. All Chemistry laboratories and chemical inventory rooms require appropriate protective eye protection to be worn at all times, even when working on a computer or instrument. Four laboratories are exempt because of no working hood: Keyes 406, Keyes 303B and Keyes 111. Specific types of goggles not supplied by the department, but required for extra precautions, are supplied by the PI or Department Safety Coordinator. Laser goggles are addressed in the Laser Safety Manual (CHO).

5.6. Equipment Specific Lab Safety Requirements:
5.6.1. Schlenk lines are maintained in a glove box in Keyes 202 and under two hoods in Keyes 409. Schlenk lines consist of a dual manifold with several ports used to safely manipulate air sensitive compounds where one manifold is connected to a source of purified inert gas, while the other is connected to a high-vacuum pump. The inert gas line is vented through a bubbler, while solvent vapors and gaseous reaction products are prevented from contaminating the vacuum pump through a liquid nitrogen or dry ice/acetone cold trap. The lines may contain mercury.

5.6.2. The gas cylinder cage is found on the first floor of Keyes near the basement entry stairs. Full cylinders of flammable and nonflammable gases are housed and chained in the cage and empty cylinders chained next to the cage with the caps on. All cylinders are marked as full or empty using cylinder tags stored on top of the cage.

5.6.3. Equipment requiring supplemental safety training by the PI:

- A laser system (laser), side room of Keyes 205.
- X-Ray Crystallography (radiation hazard) in Keyes 307
- Darkroom, (radiation hazard) Keyes 406A
- Tissue Culture Hood and Workspace (biohazard), Keyes 303
- Radiation Workspaces, Keyes 303A and Keyes 309
- An industrial microwave oven (microwave), Keyes 205.
- THF/Ether distillation apparatus (flammable), Keyes 203.
- (NMR) Nuclear Magnetic Resonance (magnetism, cryogen), Keyes 208
- Hazardous Materials Hood (mutagens), Keyes 303C
- Voltametry (use of mercury), Keyes 203.

6. REQUIREMENTS FOR CHEMICAL LABELING, TRANSPORT AND STORAGE

6.1. Peroxide Forming Chemicals

- The Chemistry Department discourages the use of and limits the accumulation of chemicals that may form explosive peroxide crystals. These chemicals not only create a physical hazard upon crystallization, but also require excessive monetary and other resources for their disposal.
- It is the responsibility of the PI to adhere to the shelf life designated on the bottle label. Peroxide-forming chemicals should be routinely checked for peroxide formation using peroxide test strips.
- Expired bottles that test negative for peroxides are stored in the HWSA until the 90-day pickup. Any container that does test positive for peroxides, prior to or beyond the expiration date, or is unsafe to be added to the next hazardous
waste shipment will require alternate treatment, and the faculty member who ordered the chemical is responsible for notifying the CHO. Avoid touching or moving a suspect bottle.

- Store all peroxide forming chemicals away from sunlight. Use explosion proof refrigeration if flammable.
- Peroxide crystals may form on the container plug or threads of the lid. When twisted, detonation can occur. Never open a liquid organic peroxide or peroxide forming chemical if crystals or a precipitate are present.
- Purchase peroxide forming chemicals with peroxide inhibitor (ex. BHT), whenever possible. Order quantities that can be used within expiration and disposal time limits.
- Do not distill, evaporate or concentrate any peroxide forming chemical until tested for the presence of peroxide.

6.2. Chemistry Department Chemical Transport and Storage Requirements:

6.2.1 Chemistry Department laboratories, prep rooms, inventory and storage rooms are supplied with safety compliant cabinets for the proper storage of flammable, acidic, basic, toxic chemicals. Improper storage of chemicals in working hoods, on bench tops or on the floor is prohibited.

6.2.2 All Chemistry laboratories, prep rooms and inventory rooms are supplied with at least one designated (4L) plastic chemical carrier bucket, labeled for ownership, to be used for all chemical transport. If borrowed, please return the buckets to the proper location. Use a lab cart to transfer larger items.

6.2.3 All refrigerator/freezers housed in a Chemistry laboratory, prep or storage room that contains hazardous materials must be an explosion proof unit. Chemicals need to be separated for incompatibilities and housed in secondary containment.

6.2.4 The Outside Flammables Room (Keyes 121) is to be used for all flammable chemicals not in active use. Entry is restricted by authorized security card access and pin code.

6.2.4.1 Solid flammables are stored alphabetically in the flammable cabinet on the wall. General use liquid flammables are stored on the top shelf and on the left shelf unit. Specific lab solvents are marked with the PI name and stored on the center and right shelf unit. 20L drums of solvent are stored, but not stacked on the floor. The refrigerator/freezer is to be used for extremely flammable and/or explosive materials. This unit is wired to ground for safety against sparks.

6.2.5 Absolute (200 proof) and 95% (190 proof) ethanol is kept under special key and is subject to mandatory state inventory. It is housed in the back closet (Keyes 121-A) in the Keyes Outside Flammables Room.
6.2.6 Keyes Room 4 is used for non-flammable chemical storage, and hazardous and radioactive waste storage. Entry is restricted by authorized security card access and pin code.

6.2.6.1 Chemicals are separated by hazard and stored alphabetically. Oxidizing acids, non-oxidizing acids, bases, oxidizers and toxic chemicals are stored in labeled safety cabinets. Lewis acids, organic acids are separated and further separated from general use materials. Hydrofluoric acid is kept in a separate acid cabinet. (Refer to LSP for safety guidelines.)

6.2.6.2 Keyes Room 6 is used to temporarily store chemicals that have been retrieved by safety-trained personnel from the Eustis mailroom. Packages are safely inspected for odors and/or leakage. Goggles and gloves are required. Unsafe packages are not opened and the Departmental Safety Coordinator is immediately notified. Safe packages are opened, inspected and stored on the shelf unit. All liquids are stored the bottom shelf only. A refrigerator and freezer unit is available. Larger items and drums/cases of solvents are stored on the floor. The PI is notified and is responsible for the prompt and safe storage of the material.

7. WASTE MANAGEMENT

7.1. Types of Laboratory Waste:

Lab waste may fall into a number of different categories and management requirements. It is the responsibility of the faculty member who oversees the laboratory to properly characterize and manage the waste generated in their labs. Specific waste practices are outlined in the Colby College LSP.

8. HAZARD COMMUNICATION

8.1. Door Signs:

8.1.1. The Chemistry Department will also include Hazard Identification forms (HIF) and Standard Operating Procedures (SOP) that will further aid in the identification of hazardous materials and/or procedures specific to that workspace. These forms are included in the package so that emergency personnel unfamiliar to the workspace can readily identify what hazards are present and where the hazards are located in the workspace before they enter the room. The HIF will identify the specific hazard and the location of each. The SOP will identify a specific hazard and/or procedure and how to best respond to that particular hazard. (APPENDIX B, C)

9. LABORATORY EMERGENCIES

The Chemistry Department uses door signage to display emergency information specific to every laboratory, prep, inventory and storage room. Included either on the door or inside the
workplace is a green and white sticker that will display the location of the nearest spill kit and first aid supplies.

9.1. General Guidelines:
- Everyone working with chemicals in the Chemistry Department should know what to do in the case of an injury, spill, fire, accident and any other emergency specific to that workplace. No one should start to work until they know the location and how to operate the emergency equipment, the location of available exits, their role in emergency response and how to report the emergency to summon help and document the event. All faculty, staff and students must be trained to know what to do in the case of an emergency. This is reviewed on page 2 of the DLSP and in all safety-training modules.

9.2. Spill Response Guidelines:
  9.2.1. Chemistry Department Large Chemical Spill Kits are found on every floor, in and outside of The Chemical Storage Room (Keyes 004) and in the Keyes Outside Flammables Room (Keyes 121). All kits are located by using the green and white Spill Kit sticker.
    • Chemistry spill kits include: two sets of goggles, gloves, a box of ziplock bags, a sharpie, a dust pan and brush; a small mercury spill kit and a mercury spill kit for small and large spills; sodium bicarbonate, citric acid; and absorbent/vermiculite material contained in ziplock bags and dykes/pillows.
    • The Chemistry Department also houses large wheeled drum of sodium bicarbonate for large acid spills in the Keyes basement hallway outside of Room 4.

10. RECORDS
  10.1. Copies of the Chemistry DLSP are located in the Safety office, the administrative assistants office, and on the Chemistry Department web page.
  10.2. Copies of the LSP are located in the Safety office, and the administrative assistant’s office for the programs and departments covered under this plan.

11. TRAINING
  11.1. Student Training:
    All students enrolled in chemistry laboratory classes will be safety educated by the faculty/staff laboratory instructor before any laboratory work begins. This information will be summarized in the class syllabus. At minimum, students will know where the LSP/DLSP are kept, what to do in the case of an emergency and the general safety rules of that workplace. Subsequent safety issues that arise from specific laboratory procedures must be addressed at the start of the laboratory session.
  11.1.2. Research students and those working under limited supervision, must successfully complete the Colby College Moodle Safety Training Session and the
hands on Departmental Safety Training Course. Training will be documented using the Moodle module acknowledgement of training form and a sign in sheet for hand on Departmental Safety Training. Student training sessions will include the requirements and use of the LSP/DLSP, SDS, PPE, general safety rules, the location and use of emergency equipment including safety eye washes, showers, spill and first aid kits, chemical management, and emergency procedures for accidents and spills.

11.1.3. Additional training may be required for special procedures specific to a laboratory. The PI responsible for that lab will be required to deliver, document and enforce that training.

12. ACKNOWLEDGEMENT

By signing the DLSP the following Colby Personnel are certifying that they have reviewed these procedures and safety requirements, find the contents acceptable, and agree to ensure implementation within the Chemistry Department.

_________________________________________________  __________________  
Kevin Rice  
Chemistry Department Chairperson  Date

_________________________________________________  __________________
Date

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Date

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APPENDIX A: Petoxide Forming Chemical SOP

Standard Operating Procedure: Peroxide Forming Chemicals

Purpose:

This document will outline the procedures Colby College Laboratories will use to minimize the risks associated with utilizing peroxide forming chemicals. Peroxide forming chemicals undergo auto oxidation reactions upon exposure to atmospheric oxygen to form organic peroxides. Under normal storage conditions, the unstable peroxides can accumulate in the container and may explode when subjected to heat, light, friction, or mechanical shock.

Peroxide Forming Chemicals:

Most peroxide forming chemicals are carbon-based chemicals capable of forming potentially explosive peroxide “O-O” bonds. Depending upon the danger of peroxide accumulation, peroxide-forming chemicals can be divided into three categories (Class A, B, and C) listed below. The lists are not comprehensive and faculty and staff must check Safety Data Sheets and other sources of information to determine new chemicals peroxide forming potential.

List A: are examples of chemicals that spontaneously form peroxides on exposure to air (typically when opened) without further concentration or evaporation.

<table>
<thead>
<tr>
<th>Isopropyl ether</th>
<th>Sodium amide</th>
<th>Potassium metal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vinylidine chloride</td>
<td>Potassium amide</td>
<td>Divinyl ether</td>
</tr>
</tbody>
</table>

List B: are examples of chemicals that form peroxides on concentration through distillation, evaporation, or exposure to air after opening.

<table>
<thead>
<tr>
<th>Diethyl ether</th>
<th>Vinyl ether</th>
<th>Dicyclohexane</th>
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</thead>
<tbody>
<tr>
<td>Dioxanes</td>
<td>Tetrahyrdofuran</td>
<td>Furan</td>
</tr>
<tr>
<td>Ethylene glycol dimethyl ether</td>
<td>2-methoxyethyl ether</td>
<td>Nitromethane</td>
</tr>
</tbody>
</table>
List C: are chemicals, which could auto polymerize as the result of peroxide formation.

<table>
<thead>
<tr>
<th>Styrene</th>
<th>Butadiene</th>
<th>Acrylonitrile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl methacrylate</td>
<td>Vinyl pyridine</td>
<td>Chlorobutadiene</td>
</tr>
</tbody>
</table>

Storage and Labeling:

General Precautions:

- Minimize the quantity of peroxide forming chemicals in the lab and always utilize the oldest materials first.
- Store peroxide forming chemicals in sealed, air tight containers away from sources of heat and light.
- Label each container with the date received, first opened and of the most recent test for peroxides in accordance with the details provided in the section entitled: Peroxide Test Method.
- Never open or disturb containers of unknown age or history. Notify the Academic Environmental Safety Specialist (AESS) or the EH&S Director to arrange for removal and disposal.

Labeling and Inventory Procedures

1. Newly ordered peroxide forming chemicals will have the safety datasheet added to the eBinder and also to the peroxide forming chemical group.

2. The container will be added to the electronic inventory and a QC coded label will be created to track the bottle.

3. A green circular peroxide former hazard label will be attached to the bottle. If a known peroxide former does not have a peroxide former label, please contact the AESS to provide one. (The AESS or the Chemistry Department Administrative Assistant will perform Steps 1 through 3.)

4. The user will later update the circular peroxide former label with the date upon opening.
5. Annually, the AESS will create a list of peroxide forming chemicals from each lab and request the responsible PI check each opened container for peroxides using the method described below. An orange circular peroxide former hazard label will be provided by the AESS with the test date on it. If the bottle is small and no location can be found on the bottle without covering the manufactures labeling the test date peroxidized former hazard label may be placed over the date-opened peroxide former hazard label. It is important not to cover the original hazard communication labeling provided by the manufacturer.

Peroxide Testing Method:

**Visual Inspection:**

Visually inspect all peroxide forming chemicals before opening. Never try to force open a rusted or stuck cap. A container that exhibits any unusual characteristics, such as those listed below, should be assumed to have high levels of peroxides and should not be used. Notify AESS or EH&S Director to arrange for removal and disposal.

For liquids: Look for crystallization, near the cap or in the liquid, visual discoloration, or stratification. Diethyl ether is often sold in metal (are they steel or aluminum?) cans, which prevent visual inspection. Containers of diethyl ether of unknown age should be handled as containing peroxides and should not be disturbed.

For solids: (potassium metal, sodium amide) look for discoloration and/or the formation of surface crust. Evaluations of alkali metals and their amides are conducted using visual observations only.

**Testing for Peroxide Concentration:**

After the visual inspection, test for peroxide concentrations in liquids using Quantofix Peroxide 25 or Quantofix Peroxide 100 test strips. A concentration of 100PPM peroxide is the most broadly accepted control point. Request test strips from the AESS as needed.
For volatile organic chemicals, immerse the test strip in the chemical for 1 second remove and allow it to dry. Place a drop of water onto the test strip, wait 15 seconds and then compare with the color scale.

**Peroxide Concentration Action Levels**

- If peroxides are not detected, place a new peroxide former hazard label with the test date on the container and continue to use.
- If the peroxide concentration is greater than 25 ppm, but less than 100 ppm, the chemical may still be used, but do not distill or concentrate. Label the container as above example.
- If the peroxide concentration is greater than or equal to 100 ppm, it should be disposed of as a hazardous waste. Contact the AESS or EH&S Director to arrange for removal and disposal.

**Storage Limits for Peroxide Forming Chemicals**

- **Unopened chemicals from the manufacturer:** Test for peroxides or dispose after 18 months.
- **List A Chemicals:** Test for peroxides or dispose after 6 months of opening.
- **List B Chemicals:** Test for peroxides or dispose after 12 months of opening.
- **List C Chemicals:** Test for peroxides or dispose after 12 months of opening.
- **Pyrophoric Chemicals in Peroxide Forming Solvents (THF, ether, ect.):** No peroxide concentration testing with peroxide test strips, dispose of according to the timeframes above for the peroxide forming chemical.
APPENDIX B: Hazard Information Form (HIF)

BUILDING: Department of Chemistry
ROOM: _______
DATE: _______

CHEMICAL STORAGE:  

HAZARD:  

LOCATION:  

____ ACIDS-CORROSIVES:  
(Hazard code – white)  

____ BASES-CORROSIVES:  
(Hazard code – white)  

____ (SUSPECT) CARCINOGENS  

TERATOGENS/MUTAGENS  

POISONS:  
(Hazard code – blue)  

____ FLAMMABLE SOLIDS/LIQUIDS:  
(Hazard code – red)  

____ OXIDIZERS:  
(Hazard code – yellow)  

____ HIGHLY REACTIVE/INCOMPATIBLE/ACUTELY HAZARDOUS:  
(Hazard code – orange)  

SPECIAL HAZARDS:  

____ LASERS  
____ MICROWAVES  

____ RADIOACTIVITY  
____ X-RAY  

____ STRONG MAGNETIC FIELD  
____ OTHER:  

____ HIGH VOLTAGE ELECTRICITY
COMPRESSED GAS CYLINDERS:

___ He  ___ N₂  ___ O₂  ___ Ar  ___ CO₂  ___ H₂  ___ liquid N₂  ___ other:

SAFETY:

___ CHEMICAL SPILL KIT LOCATION:

___ MERCURY SPILL KIT LOCATION:

___ FIRE EXTINGUISHER(S) LOCATION:

___ NEAREST SATELLITE WASTE ACCUMULATION AREA:

___ OTHERS:
APPENDIX C: LABORATORY SPECIFIC STANDARD OPERATING PROCEDURE
Dept. of Chemistry

Date: __________
Principal Investigator: _________________________________
Telephone Number: _________________________________
Room and Building: _________________________________

A. (Please check all that apply):
   This is a hazardous ___ process/procedure (see step B).
   ___ chemical (see step C).  **Chemical name:**

B. Describe the hazardous process/procedure:

C. Describe the hazardous chemical. (Please check all that apply):
   This hazardous chemical is:
   ___ a suspect or known carcinogen
   ___ is a suspect or known reproductive toxin (mutagen, teratogen)
   ___ highly toxic to humans
   ___ toxic to the environment
   ___ an irritant
   ___ corrosive
   ___ a sensitizer
   ___ a neurotoxin
   ___ a combustible liquid
   ___ a compressed gas
   ___ explosive
   ___ flammable
   ___ an organic peroxide
   ___ an oxidizer
   ___ pyrophoric
   ___ highly unstable (reactive)
   ___ water reactive
   ___ other (please explain):

D. Personal Protective Equipment (check all that apply):
___ Non-disposable gloves must be worn (please select type):
    ___ neoprene  ___ PVC  ___ nitrile  ___ butyl rubber  ___ viton TM
___ Impermeable disposable gloves must be worn (please select type):
    ___ latex/rubber  ___ nitrile  ___ vinyl
___ Temperature protection (Kevlar/Nomex/Zetex):  ___ hot temps  ___ cold temps
___ Lab coat or apron must be worn.
___ Safety glasses/goggles must be worn (___ UV protection  ___ Laser protection)
___ Particle mask must be worn
___ Respirator must be worn. Please specify type. (Note: Must be respirator certified)
___ Hearing protection must be used. Specify type:
___ Other (please explain):

E. Engineering Controls (please check all that apply):

___ Fume hood must be used at all times
___ Laminar flow hood must be used at all times
___ "Hot-Hood" must be used at all times (carcinogens/mutagens)
___ Cold room should be used at all times
___ Inert atmosphere (glove box) must be used at all times
___ Protective barrier must be used (ex. laser light, etc.). Please describe:
___ Other (please explain):

F. Special Handling and Storage Requirements (please check all that apply):

___ Requires refrigeration
___ Requires freezing
___ Requires –80C freezing
___ Must be stored under inert atmosphere. Store under _______.
___ Known incompatibilities:

___ Inventory (NFPA) category:
___ Other (please explain):

G. Spill and Accident Procedures:
___ In the case of contact with eyes, immediately flush with copious amounts of water for at least 15 minutes (use safety eye wash).

___ In the case of contact with skin, immediately wash with soap and copious amounts of water.

___ In the case of a spill, departmental spill carts and procedures are sufficient.

___ In the case of a spill, evacuate the room immediately and call x5911 for cleanup. Close the door, post a warning on the door and prevent any unauthorized entry into the area.

___ Other:

H. Decontamination Procedures:

I. Waste Disposal Procedures (refer to the MSDS Sheet):

___ Can be disposed of safely down the sink with copious amounts of water.

___ Must be disposed of in the SAA as a:

    ___ flammable ___ oxidizer ___ toxic/heavy metal ___ reactive

    ___ acid (pH less than 2) ___ base (pH greater than 12)

___ Incompatibilities (please list):
APPENDIX D: Door Signage