THE PROJECT PACKAGE

How to Go About Getting Into and Out of Project Space in the Cal Poly Chemistry & Biochemistry Department

PLEASE READ THIS ENTIRE PACKAGE BEFORE REQUESTING SPACE OR CHEMICALS FOR YOUR LABORATORY PROJECT

There are several steps you must complete in order to acquire materials or space for your project. Below is a list of these steps arranged as a checklist for your convenience. This package also contains blank copies of the forms you will need to submit in order to accomplish many of these steps.

1. You must be currently enrolled in the Chemistry or Biochemistry course which involves you in this laboratory work.

2. CHEMICAL HAZARD ASSESSMENT FORM (attached) - Submit this completed form to the C-wing stockroom as early as possible. Chemicals which must be ordered may take 6 to 8 weeks to arrive.

3. ROOM KEY REQUEST CARD (at C-38 stockroom) - This card must be submitted to the C-wing stockroom each quarter to secure key access to your space under the terms described on succeeding pages.

4. PROJECT ROOM SAFETY CARD (at C-38 stockroom) - This card identifies your space and gives a summary of the materials in use in the project room.

5. DOCUMENTED SAFETY TRAINING - At minimum, this must include submission of a signed copy of the Laboratory Safety Rules before project keys will be issued.

-----The bulk of this package describes these steps in detail.-----

There is also a description of the sixth step:

6. CHECKING OUT at the end of your project to avoid charges and/or holds.
ROOM KEY REQUEST CARD

The choice of your particular space is determined by the nature of your project, existing assigned spaces, and the wishes of your project advisor.

To have key privileges to your project room (meaning the door to the room) you must have a completed, current Room Key Request Card on file in the C-38 Stockroom. This card is valid for one academic quarter only. If you begin a new project, or if the project is a two-quarter project, you must submit a new Room Key Request Card at the beginning of each subsequent quarter.

ROOM KEY ENROLLMENT WAIVER

Occasionally a one-quarter project will take a bit more time to finish up. When you are "finishing up" a project during a subsequent quarter and you are not enrolled in the course for this project, you must submit a completed Room Key Enrollment Waiver to the C-38 Stockroom to have key privileges. Please note that this card requires the signature of the Chemistry & Biochemistry Department Chair as well as that of your project advisor.

PROJECT ROOM SAFETY CARD

Insert the completed Project Room Safety Card in the holder mounted by the door of your project room(s). This card assists first responders (police, fire) in case of an emergency – use complete chemical names only, not acronyms, structures or chemical symbols.

PROJECT SPACE

Locker space (drawers or cabinets) can be assigned to you upon your acquisition of the above key privileges. Some lockers have a hasp installed instead of a permanent lock; in this case, you will have to bring your own padlock.

Put a label bearing your name, the current quarter, and the course:
1. On the outside of your locker(s)
2. On any of your equipment not kept in the locker (especially chemicals).
PROJECT KEY POLICY

1. The Chemistry Stockroom will issue keys to students between 8 a.m. and 5 p.m. only. Your current Cal Poly ID card must be presented to obtain keys.

2. The Room Key Request Card allows project students to check out project keys for same-day use only. “Request for Exception to Key Policy” forms allowing overnight, Monday – Friday, or weekend key use are attached to this package and must be signed by by the project advisor.

3. If you fail to return the key on time, key privileges will be suspended for one week for the first offense. A second offense will result in loss of your key privileges for the remainder of the quarter.

Your project advisor will then be confronted with the problem of your access to the lab.

4. If you fail to return the key, a hold will be placed on your grades, registration, and reagent and equipment check-out from the Stockroom. If you still fail to return the key, the core of the lock will be changed and you will be charged the cost ($80.00 per key).

5. Faculty who allow facilities access to students should supervise the students and area.

6. Senior project and special project students will be issued space and lockers only while registered for the appropriate course.

7. Students who abandon senior project lockers will be assessed a $15.00 clean-up fee.

8. Faculty research space and equipment will not be disturbed or moved without approval of the faculty concerned.

9. Key privileges expire at the end of the last day of finals each quarter.
LABORATORY WORK RULES

1. Students must never work in laboratories alone. There must be a "buddy" at least within hailing distance. (He/she can hear you and aid you in case of an accident.)

2. Other persons present in the laboratory may not perform lab work without separate authorization. The keyholder may not admit others into the laboratory to perform laboratory work. The door may not be blocked open or left unlocked when you leave the room.

3. The laboratory must be left in a clean and orderly condition. Dirty apparati and glassware must be cleaned and stored in appropriate locations. Large amounts of chemicals not currently being used, especially solvents, must not be accumulated in the laboratory. Return this material to the Stockroom.

4. Doors and windows must be closed and locked when the laboratory is unattended.

5. Windows are not to be opened to sweep noxious fumes into the hall. Instead, turn on the fume hood, leave the laboratory, and close the door.

6. A project to be left operating unattended must meet the following criteria:
   
   (a) Projects to be left unattended must first be discussed with the project advisor. Reasonable care must be exercised to prevent the development of hazardous situations in case of unexpected occurrences such as electrical power interruption or equipment failure.

   (b) All running water connections must be wired securely.

   (c) Apparatus must be tagged indicating its contents, the name and home number of both the student and the project advisor, and the dates of start-up and shut-down.

   (d) All services left on (gas, water, electricity) must have a tag on the valve or switch, reading “DO NOT TURN OFF”.

7. Equipment, glassware, or chemicals may not be removed or borrowed from other labs or other projects unless specific permission has been obtained from the original user or the Chemistry Department staff (not student assistants).

8. Current Chemistry and Biochemistry Department Safety Policies (next page) must also be adhered to.

9. Failure to adhere to either Laboratory Work Rules or current department Laboratory Safety Rules will result in revocation of key privileges for the remainder of the quarter.
The rules listed here are minimum rules that apply to all laboratory work in the Chemistry & Biochemistry Department. Your instructor may add others. **Failure to comply with these rules may result in reduction in grade or, in extreme cases, expulsion from the lab.**

**Do These Things**

1. You must always wear appropriate eye protection whenever anyone is working with hazardous chemicals or processes in the lab. (See the Protective Equipment Guide for information on correct goggle types)
2. Confine loose hair and clothing. Wear closed shoes (e.g. sandals and clogs are not appropriate footwear). A lab coat or lab apron must be worn at all times while you are working with hazardous chemicals in the laboratory. Wear gloves that are resistant to permeation by chemicals that can cause serious or irreversible damage upon skin contact. (See the Protective Equipment Guide for information on lab coat, apron and glove types and availability)
3. Report a significant physical or medical condition -- for example, pregnancy or chemical allergy -- to your instructor.
4. If you injure yourself -- for example, if you cut, burn, or spill a harmful chemical on yourself -- tell your instructor at once.
5. Make sure you understand and follow all directions for each experiment, including the safety directions.
6. Be very careful with flames. Do not use a Bunsen burner unless your instructor has specifically told you to do so.
7. Learn the locations of safety equipment -- safety showers, eye wash fountains, fire blankets and substances for neutralizing acid spills. Locations of showers and eye wash fountains are especially important because you may need one suddenly. Use of fire extinguishers is limited to faculty; in case of fire, leave the room.
8. Keep your equipment locker and work area neat. Clutter creates accidents.
9. Dispose of waste chemicals according to directions stated in your lab manual or given by your instructor. Do not return unused chemicals to their original containers.
10. Clean up spilled chemicals or broken glass immediately. Dispose of broken glass in designated glass disposal boxes. If you break a thermometer, tell your instructor immediately so the mercury can be cleaned up.
11. Wash your hands before leaving the lab.

**Do Not Do These Things**

1. Do not enter a laboratory unless authorized by the instructor.
2. Do not work alone in any lab. Do not perform unauthorized experiments. These rules also apply to project students.
3. Do not eat or drink in the lab. Do not place food or drink containers on bench tops.
4. Do not kneel or stand on lab stools or sit on bench tops.
5. Do not remove any reagents, products, or equipment from the department. Theft or intentional misuse of laboratory reagents, products, or equipment will be reported to Judicial Affairs for disciplinary action.

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**Laboratory Safety Rules**
Chemistry and Biochemistry Department
Cal Poly State University, San Luis Obispo

revised 5/02
MEDICAL EMERGENCIES

A medical emergency is a medical condition that is an immediate threat to your life or long-term health. Generally, if your medical condition can wait until the next day for assessment or treatment, it is not a medical emergency.

If you or your lab partner experience or exhibit any of the symptoms or conditions in the following list, call 911 immediately. The Cal Poly dispatcher will help you assess the situation and initiate the appropriate emergency response.

WHEN TO CALL 911:
- Unconsciousness or altered level of consciousness
- Trouble breathing or breathing in a strange way
- No pulse
- Persistent chest or abdominal pain or pressure
- Severe bleeding
- Seizures, severe headache or slurred speech
- Poisoning
- Vomiting blood or passing blood
- Injuries to head, neck or back
- Possible broken bones
- Victim cannot be moved easily

NOTE: You will need to use private insurance for ambulance transport, emergency treatment away from campus, hospitalization, and treatment by medical specialists not available at Cal Poly Health Services.

LABORATORY ACCIDENTS / INJURIES

MINOR LABORATORY INJURIES

Minor laboratory injuries (e.g. small cuts, skin irritation) are common in the Chemistry & Biochemistry department. If you suffer a minor injury while working on a laboratory project you must report the injury to your project advisor as soon as possible; if your project advisor is not available, seek out any Chemistry & Biochemistry faculty or staff for assistance. If you or your advisor feels that your condition should be evaluated by a medical professional, the following options are available:

FREE SERVICES - ON-CAMPUS HEALTH CARE

- Cal Poly Health & Psychological Services: Open MTRF 8-4:30 W 9 – 4:30
  Free physician and nurse practitioner visits, laboratory and x-ray, low-cost pharmacy and dermatology.

PRIVATE INSURANCE - AFTER-HOURS HEALTH CARE (OFF-CAMPUS)

Cal Poly H&P Services (“The Health Center”) does not provide any after-hours care. If you wish medical attention after 4:30 pm or during the weekend, you must go to an off-campus facility. You must have your own insurance or pay cash for these services. Your insurance provider may require pre-approval or a per visit co-pay – call the number on your insurance card to find out.
Emergency After-Hours Care (San Luis Obispo)

- Sierra Vista Regional Medical Center, 1010 Murray St. (805)546-7650 (ER)
- French Hospital Medical Center, 1911 Johnson Ave. (805)542-6377 (ER)
- General Hospital, 2180 Johnson Ave. (805)781-4800

Non-emergency After-Hours Care (San Luis Obispo)

- Family & Industrial Medical Center, 47 Santa Rosa (805)542-9596
- Med Stop, 263 Madonna Road (805)549-8880
- Other: You may see any health care provider that your private insurance allows.

FIRE

Laboratory fires will not occur if necessary precautions are observed consistently (identify flammable materials, control ignition sources, store chemicals properly, use fume hoods). Any fire, however small, must be reported to your project advisor immediately. If you are confronted with a large fire (i.e. a fire you cannot smother easily or allow to burn out), you must be prepared to take action to protect yourself and others.

SMALL FIRE (can be smothered easily or will soon burn out)
- De-energize any equipment involved (hot plate, bunsen burner, etc.).
- Remove any nearby flammable or combustible materials.
- If fire is inside fume hood, let it burn or smother (if easy to do so).
- If fire is on bench, smother (if easy to do so).

LARGE FIRE (too much fuel to smother easily or fire has spread)
- Evacuate the room.
- Pull fire alarm.
- Go to a safe location and call 911.
DO NOT ATTEMPT TO FIGHT A LARGE FIRE !!!
EXTINGUISHERS ARE INTENDED FOR USE BY TRAINED PERSONNEL ONLY.

SPILLS

SMALL SPILLS

Small hazardous material spills are spills that can be easily and safely cleaned up by one person. The spilled material must be disposed of properly – hazardous material spills must be handled as hazardous waste.

LARGE SPILLS

Large hazardous material spills are spills that cannot be handled safely by one person.
- Evacuate the laboratory immediately and lock the laboratory doors.
- Alert your advisor or a stockroom technician, if possible, for instructions.
- If you cannot speak directly with your advisor or a stockroom technician, you must call 911.
- Stand by in a safe location to assist by providing information to emergency personnel when they arrive.
Chemistry & Biochemistry Department policy stipulates that students may hold project room keys only between 8:00 am and 5:00 pm, Monday through Friday. The time constraints of an experiment may occasionally require an exception to that stipulation. This exception may be granted only for **ONE** overnight period or for **ONE** weekend period (from Friday afternoon to Monday morning) by this document.

For this exception to be granted there must be another person present in or near the project room while an experiment is being prepared, performed, and cleaned up. This person (the “buddy”) must be conversant in the processes and materials being used and be able to render assistance in case of an accident.

Room Number _____________

Name of Student Requesting this Exception ________________________________

Name of the Other Person (the “buddy”) ________________________________

Reasons for requesting this exception are:

The experimental work which will be done during this time is:

I agree to return the key(s) **before noon** to the Chemistry Stockroom on the weekday morning immediately following the date I have indicated as “Today’s”. (Keys borrowed on Friday are due Monday).

Student’s Signature __________________________ Today’s Date _____________

I have read and approve the above request. I understand that it is my responsibility to enforce current safety policies.

Project Advisor’s Signature __________________________ Date _____________
Chemistry & Biochemistry Department policy stipulates that students may hold project room keys only between 8:00 am and 5:00 pm, Monday through Friday. The time constraints of an experiment may occasionally require an exception to that stipulation. This exception may be granted for up to five days in ONE Monday through Friday work week by this document.

For this exception to be granted there must be another person present in or near the project room while an experiment is being prepared, performed, and cleaned up AFTER 6 PM. This person (the “buddy”) must be conversant in the processes and materials being used and be able to render assistance in case of an accident.

Key Request Interval: Today’s Date ____________ Key Return Date ____________
Room Number ___________
Name of Student Requesting this Exception ________________________________
Name of the Other Person (the “buddy”) ________________________________ (if after 6 PM)
Reasons for requesting this exception are:

The experimental work which will be done during this time is:

I agree to return the key(s) **before 5:00 pm** to the Chemistry Stockroom on the “return” date I have indicated above.

Student’s Signature ____________________________ Today’s Date ____________

I have read and approve the above request. I understand that it is my responsibility to enforce current safety policies.

Project Advisor’s Signature ____________________________ Date ____________
CHECKING OUT

At the end of each quarter your access to project space and key privileges expire. At this time, your fate will fall into one of the following categories:

1. **Your project is complete and you check out.** This means that you, personally, clean all your glassware and equipment and return it to the appropriate Stockroom, where the items are eliminated from your record. You also return all unused quantities of reagents you acquired from the Stockroom and all waste chemicals (IN PROPER CONTAINERS WITH PROPER LABELS) which you generated. *Attached to this package is a sample of proper waste chemical labeling.* You must turn in any locker keys borrowed from the Stockroom.

2. **Your project is continuing,** either because it is a two-quarter project or because you need a little more time to "finish up". You must submit a new Room Key Request Card or a Room Key Enrollment Waiver Card to have access to your space during the subsequent quarter. **IN ANY CASE, YOU MUST NOTIFY THE C-38 STOCKROOM IN WRITING (BY TURNING IN A KEY CARD) THAT YOUR PROJECT IS CONTINUING,** rather than assume that your space will be there next quarter.

3. **You disappear.** This means that the C-38 Stockroom does not hear from you regarding the return of your equipment or the continuation of your project.

!!!!! **YOU MUST TELL US SOMETHING BY THE END OF THE QUARTER.** !!!!!

If you choose to disappear:

- Your locker will be cleared out by the Stockroom and the equipment and glassware will be cleaned. You will be charged $15.00 plus the cost of any missing or broken equipment. If it is necessary to cut off your padlock, this will be done at your expense. These charges are likely to become a hold on your records (registration, grades, and diploma).

- Simply registering for a course (Senior Project, Chem 400, etc.) is not sufficient to prevent your space being cleared out and charges added to your bill. The C-38 Stockroom has no idea which courses you have registered for in your schedule. To save your space, you need to tell us that you are continuing and bring written confirmation of your status (completed and signed Key Request Card or Room Key Enrollment Waiver).
CHEMICAL HAZARD ASSESSMENT FORM

List ALL the chemicals you expect to use (including solvents) and estimate the amounts required. All the chemicals for your project must be known to the Chemistry & Biochemistry Department.

Include on the Chemical Hazard Assessment Form:
- Chemicals you expect to get from the Stockroom.
- Chemicals you are getting directly from your advisor.
- "Common" chemicals - that is, those usually found available in the lab (acids, solvents, drying agents, etc.)
- Chemicals you are getting from an outside source (such as another department or off-campus)

NOTE: A short list of materials that are generally recognized as safe appears on the following page. You do not need to list these materials on the Chemical Hazard Assessment Form.

When you have completed the Chemical Hazard Assessment Form, you must meet with the Technical Staff member in the C-38 Stockroom in order to find out which chemicals are available in stock, which chemicals must be ordered and whether the cost will be less than the spending limit for project work.

Bring your completed Chemical Hazard Assessment Form to the C-wing Stockroom as early as possible. Some materials may be difficult to obtain, and it is to your advantage to confront these delays early in your project. The Technical Staff member in the C-38 Stockroom will check your completed Chemical Hazard Assessment Form for completeness and accuracy. You should be present when this review takes place so that you will know which chemicals will have to be ordered and whether you have neglected to list vital hazards or regulations associated with your requested chemicals.

HAZARDOUS PROPERTIES

Students enrolled in Chem 461 or 462 (Senior Project) will find this requirement specified in the Senior Project Guidelines under:
"II. Responsibilities of Student."
"It is your responsibility to "investigate sources to determine known hazards."
The books listed in this section are available at the Cal Poly Library and the Chemistry Stockrooms. Go to http://www.hazard.com for the best chemical safety information available on the Internet (we highly recommend using this website before consulting the books). Look at as many MSDSs as you can for each chemical, since many MSDSs are incomplete and/or inaccurate.

REGULATED MATERIALS

If you are requesting controlled substances or regulated carcinogens, you will be required to submit further documentation. A list of these substances is attached to this package; your use of the substances is dependent upon Department Head Approval. The approval form is available at the C-38 Stockroom.
Materials Generally Recognized As Safe

The materials listed below do **not** require a completed Chemical Hazard Assessment Form for use by Chemistry and Biochemistry Department laboratory project students.

- Agar
- Agarose
- Ammonium sulfate
- Calcium chloride
- Copper metal
- Dextrose (Glucose)
- Dowex resins
- Fructose
- Galactose
- Iron (II) sulfate
- Lactose
- Magnesium chloride
- Magnesium sulfate
- Maltose
- Potassium bromide
- Potassium chloride
- Potassium hydrogenphosphate
- Potassium dihydrogenphosphate
- Potassium sulfate
- Ribose
- Sodium bicarbonate
- Sodium chloride
- Sodium hydrogenphosphate
- Sodium dihydrogenphosphate
- Sodium sulfate
- Sucrose
- Vinegar
- Xylose
### CHEMICAL HAZARD ASSESSMENT FORM

**for Senior Project, Chem 200, 400, etc.**

**CHEMISTRY & BIOCHEMISTRY DEPT.**

**CALIFORNIA POLYTECHNIC STATE UNIVERSITY**

<table>
<thead>
<tr>
<th>NAME</th>
<th>DATE</th>
<th>COURSE</th>
</tr>
</thead>
</table>

List ALL chemicals required for this project, including "common" chemicals, and amounts required. Fill in all pertinent safety data in the spaces provided.

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>FORMULA</th>
<th>AMOUNT REQUESTED</th>
</tr>
</thead>
</table>

#### PHYSICAL DATA

<table>
<thead>
<tr>
<th>bp °C</th>
<th>mp °C</th>
<th>Flash Point ° F</th>
<th>Vapor</th>
<th>Autoignition Temp ° F</th>
</tr>
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</table>

#### MAJOR HAZARDS

#### TOXICITY DATA

<table>
<thead>
<tr>
<th>Carcinogen</th>
<th>Inhalation</th>
<th>Skin Contact</th>
<th>Ingestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>IARC</td>
<td>NTP</td>
<td>LC50</td>
<td>LD50</td>
</tr>
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</table>

| species | species | species |

#### PERSONAL PROTECTIVE EQUIPMENT

#### DISPOSAL

<table>
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</tbody>
</table>

| species | species | species |

#### PERSONAL PROTECTIVE EQUIPMENT

#### DISPOSAL

Continue on the back of this sheet if necessary.

**USE:** Outline briefly what you intend to use these chemicals for.

**CERTIFICATION:**

I agree to follow department safety policies while using the materials listed on this form.

I will use appropriate personal protective equipment for these materials (as detailed for each material).

<table>
<thead>
<tr>
<th>Student’s Signature:</th>
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<tr>
<th>Advisor’s Signature:</th>
<th>Date</th>
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STATE REGULATED CARCINOGENS

The complete updated list of carcinogens follows. If any of these chemicals are being used the approval of the Chemistry & Biochemistry Department Chair must be obtained. The form that is used for this approval is available in the C-38 Stockroom.

2-Acetylaminofluorine
Acrylamide
Acrylonitrile
Aflatoxins
4-Aminobiphenyl
Arsenic and certain arsenic compounds
Asbestos
Azathioprene
Barium chromate
Benzene
Benzidine (and its salts)
Bis(chloromethyl)ether
1,4-Butanediol dimethylsulfonate
Chlorambucil
Chloromethyl methyl ether
Chromium and certain chromium compounds
Cyclophosphamide
1,2-Dibromo-3-chloropropane
3,3'-Dichlorobenzidine (and its salts)
Diethylstilbestrol
4-Dimethylaminoazobenzene

Dimethylsulfate
Ethylene dibromide
Ethylene oxide
Ethyleneimine
Formaldehyde
Hexamethylphosphoramide
Hydrazine
Melphalan
4,4’-Methylene-bis[2-chloroaniline]
Bis(2-chloroethyl)sulfide
Chlornaphazine
alpha-Naphthylamine
beta-Naphthylamine
Nickel carbonyl
4-Nitrobiphenyl
N-Nitrosodimethylamine
beta-Propiolactone
Thorium dioxide
Treosulfan
Vinyl chloride

CONTROLLED SUBSTANCES

Include:

Methylamine
Ergotamine tartrate
Diethyl malonate
Malonic acid
Ethyl malonate
Barbituric acid
Piperidine
CONSENT FOR THE USE OF REGULATED CARCINOGENS

Chemical Name of Carcinogen  Amount granted by this document

________________________________  ___________________________

Intended use of the above chemical :

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Instructor requesting the Regulated Materials listed above : ______________________

To be used in Chem _________ by _____________________________ (student ).

Granting of this consent is conditional. All users of the above chemicals agree to the following :

1. All uses and operations with the carcinogens above shall be performed within a laboratory exhaust fume hood. "Operations" include but are not limited to pouring, measuring, heating, cooling, distilling, vacuum distilling, subliming, refluxing, recrystallizing.

2. The laboratory fume hood used shall be drawing a minimum of 100 lfm air velocity at the face of the hood at all times during the period of use of the carcinogens above. Label the fume hood with a sign ( CONTROLLED WORK AREA : CARCINOGENS IN USE ).

3. All persons working with the carcinogens above shall be wearing safety goggles, a lab coat or apron, and rubber or plastic gloves. Limit traffic through the area.

4. After working with these carcinogens, return them to secure storage immediately and decontaminate the work surfaces.

5. All used or "waste" solids and liquids containing any of the above carcinogens ( including mixtures with other substances ) shall be placed in appropriate, tightly closed container(s) and LABELED with a Hazardous Waste label containing the word "CARCINOGENIC MATERIAL", the chemical name(s) and concentration(s) of all the materials in the waste container, the name of the generator, and the date.

The undersigned have read, understand, and agree to conditions 1 through 5 above.

Student's signature : ___________________________  Date : __________________

Instructor's signature : ___________________________  Date : __________________

Department Chair's signature : ___________________________  Date : __________________
# CONSENT FOR THE USE OF CONTROLLED SUBSTANCES

<table>
<thead>
<tr>
<th>Chemical Name of Controlled Substance(s)</th>
<th>Amount granted by this document</th>
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Intended use of the above chemicals:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Instructor requesting the Controlled Substances listed above: ______________________
To be used in Chem _______ by ______________________________ (student).

The undersigned certify that the controlled substances listed above will not be used for any purpose other than stated above.

Student's signature: ___________________________ Date: _____________
Instructor's signature: _________________________ Date: _____________
Department Chair's signature: __________________ Date: _____________
HAZARDOUS WASTE

Laboratory project students, under the supervision of project advisors, are responsible for proper handling and disposal of any hazardous waste that is generated in the course of a project. Regulation of laboratory hazardous waste is governed by a complicated web of intersecting federal, state and local codes. Nevertheless, every generator of hazardous waste (including every project student) is expected to know and comply with waste regulations; Cal Poly is subject to inspection by hazardous waste regulating agencies and substantial fines can be assessed against the Chemistry and Biochemistry Department for violations. The following sections will define hazardous waste and describe basic handling and labelling procedures.

WHAT IS HAZARDOUS WASTE?

Title 22 contains several extensive lists of hazardous materials. If a material does not appear as a “listed waste”, it can still be qualified as “hazardous” if it exhibits any of the following characteristics, whether or not it is listed in Title 22: ignitability, corrosivity, toxicity or reactivity. The criteria for determining whether a waste falls into one or more of these hazard classes is detailed in the regulation. Note that a hazardous waste may exhibit more than one of the qualifying characteristics. A mixture must be evaluated according to the criteria for the hazardous waste characteristics, including calculating an oral LD50 value based on the LD50s of the components of the mixture.

Since the number of materials used in our department that qualify as hazardous waste far outnumbers materials that can be flushed down the drain and since the fines that can be levied are huge, the safest bet is to assume that your waste materials are regulated as hazardous waste. The Organic Chemistry stockroom technician will help you and your project advisor assess and categorize your waste stream.

PROPER HANDLING AND DISPOSAL OF HAZARDOUS WASTE

1. Hazardous waste containers must be in good condition, compatible with the waste contained therein and bearing no label other than the hazardous waste label described below. In addition, all waste containers must have secondary containment in case of spills or leaks – either placed in another container or stored in a basin that is capable of holding all of the contents. Suitable containers and basins are available at the stockrooms.

2. Every container must have a Cal Poly Chemistry and Biochemistry Department “Hazardous Waste” label. Non-specific labeling, such as “solvent waste” is unacceptable and subject to substantial fines. Hazardous waste labels are available at the stockrooms.

3. Every container must have the chemical constituents clearly written on the Hazardous Waste label; trade names, chemical symbols and chemical structures are unacceptable and subject to substantial fines. In addition the percent composition of the container must be listed for each chemical constituent (including water).

4. Every container must have the accumulation date written on the label; the accumulation date is the first day that you start adding waste to the container. Do not accumulate waste beyond 90 days. Your name must also appear on the hazardous waste label.

5. Containers of hazardous waste must remain sealed except when waste is being added to the container. The container must have a tight-fitting screwcap lid that will not leak if the container is tipped over. Do not leave funnels in the containers.
EXAMPLES OF HAZARDOUS WASTE LABELING
These labels are available (blank) at both Stockrooms.

**CORRECT** : Itemized lists of chemical names, concentrations, date, name of generator. AMPLE INFORMATION !!!!!!!

```
<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Concentration</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>hexanes</td>
<td>neat</td>
<td>100 mL</td>
</tr>
<tr>
<td>acetone</td>
<td>neat</td>
<td>20 mL</td>
</tr>
<tr>
<td>sulfuric acid</td>
<td>3 M</td>
<td>10 mL</td>
</tr>
<tr>
<td>potassium bisulfate</td>
<td>0.1 M</td>
<td>125 mL</td>
</tr>
</tbody>
</table>
```

PHYSICAL STATE : liquid

HAZARD TYPE : [ ] flam [ ] corr [ ] toxic [ ] reac (circle)

GENERATOR : Chemistry Dept. Room B-12 Name Pauling
Cal Poly State University, San Luis Obispo, CA

**INCORRECT** : No date - no names. Who made this and what is it ?????????

```
<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Concentration</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

ORGANIC WASTE

PHYSICAL STATE : 

HAZARD TYPE : [ ] flam [ ] corr [ ] toxic [ ] reac (circle)

GENERATOR : Chemistry Dept. Room 
Cal Poly State University, San Luis Obispo, CA