Insert Title

STANDARD OPERATING PROCEDURE (SOP)

Type of SOP:  ☐ Process  ☐ Hazardous Chemical  ☐ Hazardous Class

All personnel who are subject to these SOP requirements must review a completed SOP and sign the associated training record. Completed SOPs must be kept with the BYU Laboratory Safety Manual, Chemical Hygiene Plan, or be otherwise readily accessible to laboratory personnel. Electronic access is acceptable. SOPs must be reviewed and revised where needed, as described in the Department of Chemistry and Biochemistry Chemical Hygiene Plan. The unique properties of each chemical must be considered when preparing a SOP.

Date SOP Written: REQUIRED - Insert Date  Approval Date: REQUIRED - Insert Date

SOP Reviewed and Approved By: REQUIRED - Insert Approver’s Name and Signature

Principal Investigator/Laboratory Supervisor: REQUIRED - Insert Name and Phone Number

Lab Location: REQUIRED - Insert Building Name, Room Number, and Lab Phone Number

1. PRECAUTIONS AND TRAINING

REQUIRED - Describe any special permits, notifications, warning devices, or other items that must be in place before work begins. Indicate if medical surveillance for employees or other special precautions are necessary. Discuss any unique training or experiences requirements that must be fulfilled before working with highly hazardous materials.

2. PHYSICAL HAZARDS

REQUIRED - Describe the physical hazards, precautions, and prohibited activities for the process, procedure, or operation. Describe any potential hazards that exist or could foreseeably exist as a result of performing the work described in the SOP.

3. HAZARDOUS CHEMICAL(S)/CLASS OF HAZARDOUS CHEMICAL(S)

REQUIRED - List (or attach) the chemical(s) or class of chemical(s), and describe important properties and signs/symptoms of exposure. List (or attach) hazardous chemical(s) and expected by-product(s) produced if this SOP covers a laboratory process.

4. ENGINEERING/VENTILATION CONTROLS

REQUIRED - Insert descriptions of lab-specific engineering or ventilation controls used to reduce chemical exposures (e.g., fume hoods, snorkels, glove boxes, reverse flow laminar benches, biosafety cabinets, etc.) or specific equipment safety features.
5. **ADMINISTRATIVE CONTROLS**

The following elements are **required**:

1. Complete the [Chemistry/Biochemistry Lab Standard](#) training prior to working in the laboratory;
2. Complete laboratory-specific safety orientation and training on laboratory-specific safety equipment, procedures, and techniques to be used, including any applicable laboratory-specific Laboratory Safety Plan(s), prior to receiving unescorted access to the laboratory;
3. Demonstrate competency to perform the procedures to the Principal Investigator (PI), Laboratory Supervisor, laboratory-specific Safety Officer, or trainer;
4. Be familiar with the location and content of any applicable Safety Data Sheets (SDSs) for the chemicals to be used (online SDSs can be accessed from [SDS Online](#));
5. Implement good laboratory practices, including good workspace hygiene;
6. Inspect all equipment and experimental setups prior to use;
7. Follow best practices for the movement, handling, and storage of hazardous chemicals. An appropriate spill cleanup kit must be located in the laboratory. Chemical and hazardous waste storage must follow an appropriate segregation scheme and include appropriate labeling. Hazardous chemical waste must be properly labelled, stored in closed containers, in secondary containment, and in a designated location;
8. Do not deviate from the instructions described in this SOP without prior discussion and approval from the PI or Laboratory Supervisor;
9. Notify the PI or Laboratory Supervisor of any accidents, incidents, near-misses, or upset condition (e.g., unexpected rise or drop in temperature, color or phase change, evolution of gas) involving the process, hazardous chemical(s), or hazardous chemical class described in this SOP; and
10. Abide by the laboratory-specific working alone SOP, if applicable.

**REQUIRED** - Insert descriptions of any additional administrative controls (e.g., restrictions on procedure/quantity/work equipment/work locations/unattended operations/etc.), including controls that may be chemical-specific (e.g., peroxide formers).

**INSERT IF APPLICABLE** - Descriptions of any special handling or storage requirements.

6. **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

At a minimum, long pants (covered legs) and closed toe/closed heel shoes (covered feet) are required to enter a laboratory or technical area where hazardous chemicals are used or stored.

In addition to the minimum attire required upon entering a laboratory, the following PPE is required for all work with hazardous chemicals:

A. **Eye Protection**:
   i. At a minimum ANSI Z87.1-compliant safety glasses are necessary.
   ii. Splash goggles may be substituted for safety glasses, and are required for processes where splashes are foreseeable or when generating aerosols.
   iii. Ordinary prescription glasses will NOT provide adequate protection unless they also meet the Z87.1 standard and have compliant side shields.

B. **Body Protection**: At a minimum a chemically-compatible laboratory coat that fully extends to the wrist is necessary.
i. If a risk of fire exists, a flame-resistant laboratory coat that is NFPA 2112-compliant should be worn.

ii. For chemicals that are corrosive and/or toxic by skin contact/absorption additional protective clothing (e.g., face shield, chemically-resistant apron, disposable sleeves, etc.) are required where splashes or skin contact is foreseeable.

C. Hand Protection: When hand protection is needed for the activities described in this SOP define the type of glove to be used based on: (a) the chemical(s) being used, (b) the anticipated chemical contact (e.g., incidental, immersion, etc.), (c) the manufacturers’ permeation/compatibility data, and (d) whether a combination of different gloves is needed for any specific procedural step or task.

REQUIRED - Insert descriptions of PPE and hygiene practices used with each process, hazardous chemical(s), or hazardous chemical class, including any specialized PPE needed for a procedural step/task.

7. SPECIAL HANDLING AND STORAGE

REQUIRED - Indicate labeling requirements for hazardous chemicals involved in the SOP. Indicate special procedures (e.g., dating peroxide forming chemicals upon receipt). Indicate special handling procedures (e.g., handle only in fume hood, restricted access plans, special containment devices, etc.).

List storage requirements for chemicals involved in the SOP, including specific storage areas, storage according to compatibility, and policies regarding access to chemicals. Indicate special procedures such as testing for peroxide formation after the appropriate date or monitoring chemicals for signs of degradation.

8. SPILL AND EMERGENCY PROCEDURES

Follow the guidance for chemical spill cleanup from Nuisance Spill Guide, unless specialized cleanup procedures are described below. If further assistance is needed, isolate the spill, contact Environmental Management at (801) 422-6395, and stay nearby until assistance arrives.

INSERT - Descriptions of any specialized spill clean up procedures for the hazardous chemicals used in this SOP (e.g., hydrofluoric acid, pyrophorics, phenol, etc.). Additional details of lab-specific spill cleanup should be provided if applicable.

INSERT IF APPLICABLE - Descriptions of any specialized emergency procedures for locations outside of the UC Davis main campus and the UCD Medical Center campus.

9. WASTE MANAGEMENT AND DECONTAMINATION

Unwanted lab materials must be managed according to Subpart K (Unwanted Lab Materials) using the appropriate label. In general, unwanted lab material must be removed from your laboratory within 9 months of the accumulation start date. Unwanted lab materials containers and pickup requests must be completed online.

REQUIRED - Insert descriptions of laboratory-specific information on the waste streams generated, storage location, and any special handling/storage requirements.

REQUIRED - Insert descriptions of decontamination procedures for equipment, glassware, and controlled areas (e.g., glove boxes, restricted access hoods, perchloric/hot acid fume hoods, or designated portions of the laboratory).
Upon completion of work with hazardous chemicals and/or decontamination of equipment, remove gloves and/or PPE to wash hands and arms with soap and water. Additionally, upon leaving a designated hazardous chemical work area remove all PPE worn and wash hands, forearms, face and neck as needed. Contaminated clothing or PPE should not be worn outside the lab. Soiled lab coats should be sent for professional laundering. Grossly contaminated clothing/PPE and disposable gloves must not be reused.

10. SAFETY DATA INFORMATION
   REQUIRED - Indicate the location of Safety Data Sheets (SDS). Indicate the location of other pertinent safety information (e.g., equipment manuals, chemical references, emergency procedures, etc.).

11. REQUIRED EQUIPMENT
   REQUIRED - List all required equipment (e.g.) hot plate, stir plate, oven, etc.

12. DESIGNATED AREA
   INSERT - Description(s) of designated area(s) for your laboratory. Designated areas are required for "Particularly Hazardous Substances". The entire laboratory, fume hood, or a portion of the laboratory may be used, and must be labeled with the hazards.

13. DETAILED PROTOCOL
   REQUIRED - Insert or attach detailed laboratory-specific procedures for the process, hazardous chemical(s), or hazard class. You may also include any relevant supporting resources such as SafetyNets, journal citations, etc. that are applicable.
## TEMPLATE REVISION HISTORY

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<th>Date Approved</th>
<th>Author</th>
<th>Revision Notes:</th>
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<td>BYU Safety</td>
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## LAB-SPECIFIC REVISION HISTORY

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Documentation of Standard Operating Procedure Training

(Signature of all users is required)

✔ Prior to using Insert SOP Title, laboratory personnel must be trained on the hazards involved in working with this SOP, how to protect themselves from the hazards, and emergency procedures.

✔ Ready access to this SOP and to a Safety Data Sheet for each hazardous material described in the SOP must be made available.

✔ The Principal Investigator (PI), or the Laboratory Supervisor if the activity does not involve a PI, must ensure that their laboratory personnel have attended appropriate laboratory safety training or refresher training within the last three years.

✔ Training must be repeated following any revision to the content of this SOP. Training must be documented. This training sheet is provided as one option; other forms of training documentation (including electronic) are acceptable but records must be accessible and immediately available upon request.

**Designated Trainer:** (signature is required)

I have read and acknowledge the contents, requirements, and responsibilities outlined in this SOP:

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