**[CHEMICAL NAME]**

**STANDARD OPERATING PROCEDURE**

**Type of SOP:**  ProcessHazardous Chemical Hazard Class

# HAZARD OVERVIEW

[Input Hazard Overview]

# HAZARDOUS CHEMICAL(S) OR CLASS OF HAZARDOUS CHEMICAL(S)

[List chemicals or class of chemicals with signs and symptoms of exposure.]

# PERSONAL PROTECTIVE EQUIPMENT (PPE)

## Eye Protection

ANSI compliant safety glasses with side shields should be worn. Chemical splash goggles should be worn when working with larger quantities. If chemical has a skin hazard or is a caustic liquid, a face shield should be worn when splashing onto the face is a possibility.

## Skin and Body Protection

Wear chemical resistant lab coat, long pants, and closed-toe shoes. These laboratory coats must be appropriately sized for the individual and be buttoned to their full length. Laboratory coat sleeves must be of a sufficient length to prevent skin exposure while wearing gloves.

A chemical resistant apron should be used when transferring or using large quantities and splashing is a possibility.

Flame-resistant lab coat will be required, if working with pyrophoric chemicals.

## Hand Protection

Consult with your preferred glove manufacturer to ensure that the gloves you plan on using are compatible with the chemical and usage.

<https://us.vwr.com/us.vwr.com/en_US/images/Ansell_Chemical_Glove_Resistance_Guide_Aug_2016.pdf> or <http://www.thermofishersci.in/lit/Kimberly%20Clark%20Nitrile%20Gloves%20Chemical%20Resistance%20Guide.pdf>

Additional PPE may be required if procedures or processes present additional risk. It is the responsibility of the PI to ensure that any additional PPE requirements are identified and communicated to research staff. Contact EH&S for consultation.

# ENGINEERING/VENTILATION CONTROLS

All chemicals should be transferred and used in an annually certified laboratory chemical fume hood with the sash at the certified position or lower. The hood flow alarm should be checked to be operating correctly prior to using the hood.

# SPECIAL HANDLING PROCEDURES AND STORAGE REQUIREMENTS

Wash thoroughly after handling. Do not ingest or inhale nor get in eyes, skin or clothing. Remove contaminated clothing and wash before reuse.

Store in a tightly closed, labeled container and in a cool, dry well-ventilated area. Segregate from incompatible materials. Secondary containers must be labeled clearly. Follow any substance-specific storage guidance provided in Safety Data Sheet documentation.

Use small quantities whenever possible. Monitor your inventory closely to assure that you have tight control over your material.

# SPILL AND INCIDENT PROCEDURES

**Chemical Spill** - Dial 911 and EH&S 951-827-5528

Assess the extent of danger. Help contaminated or injured persons. Evacuate the spill area. Avoid breathing vapors. If possible, confine the spill to a small area using a spill kit or absorbent material. Keep others from entering contaminated area (e.g., use caution tape, barriers, etc.).

* *Small* – If you have training, use appropriate personal protective equipment and clean-up materials for chemical spilled. Double bag spill waste in clear plastic bags, label, and arrange for chemical waste pick-up.
* *Large*– Dial 911 and EH&S at 951-827-5528 for assistance. Notify others in area of spill. Turn off ignition sources in area. Evacuate area and post doors to spill area. Remain on the scene, but at a safe distance, to receive and direct safety personnel when they arrive.

*Chemical Spill on Body or Clothes* – Remove clothing and rinse body thoroughly in emergency shower for at least 15 minutes. Seek medical attention. Notify supervisor and EH&S at 951-827-5528 immediately.

*Chemical Splash Into Eyes* – Immediately rinse eyeball and inner surface of eyelid with water from the emergency eyewash station for 15 minutes by forcibly holding the eye open. Seek medical attention. Notify supervisor and EH&S at 951-827-5528 immediately.

**Medical Emergency** - Dial 911 and EH&S 951-827-5528

# DECONTAMINATION

Wear proper PPE, decontaminate equipment and bench tops using [soap and water]. Dispose of all used contaminated disposables as hazardous waste following the Waste Disposal Section.

# WASTE DISPOSAL

All waste must be disposed through the EH&S Hazardous Waste Program. Staff dealing with hazardous waste disposal should have completed UCR Hazardous Materials and Waste Management training - <https://ehs.ucr.edu/training/library#hazardous_material_waste_management>

General hazardous waste disposal guidelines:

* Affix an on-online hazardous waste tag to all waste containers as soon as the first drop of waste is added to the container.
* Store hazardous waste in closed containers, in secondary containment, and in a designated location. Do not let product enter drains. Discharge into the environment must be avoided.
* Double-bag dry waste using transparent bags.
* Waste must be under the control of the person generating and disposing of it.
* Dispose of routinely generated chemical waste within 90 days.
* Request a waste pick-up on-line using WASTe: <https://ehs.ucop.edu/waste/#/login>

# PRIOR APPROVAL/REVIEW REQUIRED

All work with [chemical name] must be pre-approved by the Principal Investigator prior to use and all training must be well documented. In addition, the following shall be completed:

* Documented specific training and specific training on the techniques and processes to be used.
* Read and understand the relevant Safety Data Sheet.
* Demonstrate competence to perform work.

A review of this SOP and re-approval is required when there are any changes to procedures, personnel, equipment, or when an incident or near miss occurs.

# DESIGNATED AREA

# Work should be completed in a laboratory fume hood designated for [chemical name].

# SAFETY DATA SHEETS

Online SDS can be found at <https://ehs.ucop.edu/sds> .

# DETAILED PROTOCOL

[Insert or attach a copy of your specific laboratory procedures for this process, hazardous chemical, or hazard class. If laboratory procedures are subject to frequent change as in a basic research environment, the paragraphs below may be sufficient to define the process for this hazardous chemical]

All lab workers who will be using [chemical name] must review this SOP and sign the associated training sheet.  Lab workers must have specific training on the proper handling of [chemical name] and understand the hazards.

Lab workers using [chemical name] must demonstrate competence to the Principal Investigator or designee by being able to 1) identify the hazards and list any particularly hazardous handling techniques (use of a schlenk line, rotary evaporation, canula transfer, extremes of pressure or temperature, etc.), 2) list the foreseeable emergency situations, 3) describe the proper response to the emergency situations, and 4) know the control measures to minimize the risks.

The research laboratory requires variation in reaction conditions to develop and optimize new chemical or biological transformations. The researcher must seek literature precedent for reaction conditions that have reasonable similarities to new chemistry that is planned with [chemical/reagent] described in this SOP. The researcher must also consult the PI or designated, experienced research coworker for approval to proceed with chemical or biological transformations that have little literature or local research group precedent. PI approval must also be obtained for significant scale- of new chemistry or biological transformations.

When working in the lab, a laboratory worker must:

* + 1. not work alone;
    2. be cognizant of all of the SDS and safety information presented in this document;
    3. follow all related SOPs in the laboratory SOP bank (PPE, syringe techniques, waste disposal, etc. as appropriately modified by any specific information in the SDS information presented in this document);
    4. employ (< quantity) of this [chemical name] in any given reaction (larger quantities REQUIRE the approval of PI or designee), and
    5. discuss ALL issues or concerns regarding this [chemical name] with the PI prior to its use.

If there is an unusual or unexpected occurrence when using this material(s), the occurrence must be documented and discussed with the Principal Investigator or Lab Supervisor and others who might be using [chemical name].  Unusual or unexpected occurrences might include a fire, explosion, sudden rise or drop in temperature, increased rate of gas evolution, color change, phase change, or separation into layers.

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**Principal Investigator or Lab Supervisor SOP Approval**

Print name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Approval Date:

Acknowledgement

**Standard Operating Procedure**

**Title: ­ [Chemical Name]**

By my signature I acknowledge the contents, requirements, and responsibilities outlined in this Standard Operating Procedure (SOP):

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| **Name** | **Identification\*** | **Signature** | **Date** |
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***\*Identification:*** *Enter your Student ID, Employee ID, UCR NetID, UCR Email*