Standard Operating Procedure

Phenol

This is an SOP template and is not complete until: 1) lab specific information is entered into the box below 2) lab specific protocol/procedure is added to the protocol/procedure section and 3) SOP has been signed and dated by the PI and relevant lab personnel.

Print a copy and insert into your
Laboratory Safety Manual and *Chemical Hygiene Plan*.
Refer to instructions for assistance.

Department:	[Click here to enter text.]
Date SOP was written:	[Click here to enter a date.]
Date SOP was approved by PI/lab supervisor:	[Click here to enter a date.]
Principal Investigator:	[Click here to enter text.]
Internal Lab Safety Coordinator/Lab Manager:	[Click here to enter text.]
Lab Phone:	[Click here to enter text.]
Office Phone:	[Click here to enter text.]
Emergency Contact:	[Click here to enter text.] *(Name and Phone Number)*
Location(s) covered by this SOP:	[Click here to enter text.] *(Building/Room Number)*

Type of SOP: [☐] Process [☒] Hazardous Chemical [☐] Hazardous Class

Purpose

Phenol is toxic. It is used to make a key precursor, bisphenol-A, to make polycarbonates and epoxide resins. It is used to make phenolic resins through condensation. It is also used as a precursor to make a variety of drugs, such as aspirin. Phenol can also be used to extract nucleic acids from cells.

Physical & Chemical Properties/Definition of Chemical Group

CAS#: 108-95-2

Class: **Reproductive toxicant, toxic, corrosive**

Molecular Formula: C_6H_6O

Form (physical state): Crystalline

Color: White

Boiling point: 182.0 °C

Potential Hazards/Toxicity

Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. Toxic if absorbed through skin. Causes skin burns. Causes eye burns. Toxic if swallowed.

Personal Protective Equipment (PPE)

Respirator Protection
A ½ or full face respirator equipped with appropriate cartridges should be used any time there is the potential for exposure to vapor and/or dust and a fume hood cannot be used.

Respirators should be used only under any of the following circumstances:

- As a last line of defense (i.e., after engineering and administrative controls have been exhausted).
- When Permissible Exposure Limit (PEL) has exceeded or when there is a possibility that PEL will be exceeded.
- Regulations require the use of a respirator.
- An employer requires the use of a respirator.
- There is potential for harmful exposure due to an atmospheric contaminant (in the absence of PEL)
- As PPE in the event of a chemical spill clean-up process

Lab personnel intending to use/wear a respirator mask must be trained and fit-tested by EH&S. This is a regulatory requirement. (http://map.ais.ucla.edu/go/1004655)

Hand Protection
Handle with chloroprene (double glove), Viton, or vinyl gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
NOTE: Nitrile gloves are a poor choice when working with phenol.

NOTE: Consult with your preferred glove manufacturer to ensure that the gloves you plan on using are compatible with phenol

Refer to glove selection chart from the links below:
http://www.ansellpro.com/download/Ansell_8thEditionChemicalResistanceGuide.pdf
OR
http://www.allsafetyproducts.biz/page/74172
OR
http://www.showabestglove.com/site/default.aspx
OR
http://www.mapaglove.com/

Eye Protection
ANSI approved safety glasses or goggles. Face shield is also recommended.

Skin and Body Protection
Lab coats should be worn. 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. Full length pants and close-toed shoes must be worn at all times by all individuals that are occupying the laboratory area. The area of skin between the shoe and ankle should not be exposed.

Hygiene Measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Engineering Controls

Work with this chemical in a certified ducted fume hood. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

First Aid Procedures

If inhaled
If inhaled, move to fresh air immediately and seek medical attention.

In case of skin contact
Immediately wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (15-20 minutes). Remove contaminated clothing and shoes immediately if necessary – recommend discarding contaminated clothing. Seek medical attention. Olive oil and vegetable oil are effective in removing phenol from skin and retarding absorption.

In case of eye contact
In case of contact with eyes, immediately flush eyes with copious amounts of water for at least 15 minutes (lifting upper and lower eyelids occasionally) and obtain medical attention.

If swallowed
In the event of ingestion, seek medical attention immediately.

Special Handling and Storage Requirements

Conditions for safe storage: Store in secondary containment with “Reproductive Toxin” label on the primary container, secondary containment and the storage location. Keep containers tightly closed in a dry, cool, and well-ventilated place away from heat, sparks, flames, and other sources of ignition. Store away from strong oxidizers such as hydrogen peroxide, chlorine, bromine, acids, and calcium hypochlorite. Store saturated phenol at 4^{o} C protected from light and moisture.

Spill and Accident Procedure

Note: Do not attempt cleanup if you feel unsure of your ability to do so or if you do not know the proper procedure to clean up the spill.

Small spills: Use vermiculite or commercially available spill absorbent material. Collect the spilled material in a clearly labeled hazardous waste container. Place absorbent pillows/pads around and flood area with water then cover with caustic soda ash to neutralize the residual material.

Large spills: Notify others in room. Evacuate the lab/room immediately. Call 911 and EH&S at x59797. Close lab doors and post warning signs at entrances/exits notifying others regarding the spill. Prevent unnecessary entry into the spill area. Provide assistance and information to spill responders.

Chemical Spill Dial 911 and EH&S at (530) 752-1493

Spill – 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 (<1 L) – If you have training, you may assist in the clean-up effort. Use appropriate personal protective equipment and clean-up material for chemical spilled. Double bag spill waste in clear plastic bags, label and take to the next chemical waste pick-up.

Large (>1 L) – Dial **911** and EH&S at (530) 752-1493

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 (530) 752-1493 immediately.*

Chemical Splash Into Eyes – Immediately rinse eyeball and inner surface of eyelid with water for 15 minutes by forcibly holding the eye open. Seek medical attention. *Notify supervisor and EH&S at (530) 752-1493 immediately.*

Medical Emergency Dial 911 or (530) 752-1230

Life Threatening Emergency, After Hours, Weekends And Holidays – Dial **911** or contact the Sutter Davis Hospital directly at (530) 756-6440 (located at 2000 Sutter Place). *Note: All serious injuries must be reported to EH&S at (530) 752-1493 within 8 hours.*

Non-Life Threatening Emergency– Go to the Occupational Health Facility (OHF) for employees, (530) 752-6051, in the Cowell Building on California Ave. Hours: M,T,Th,F, 8 a.m. to 5 p.m. and W from 9am to 5pm (the clinic is closed daily 12pm to 1pm for lunch) or Student Health and Counseling Services for students at (530) 752-2300 on La Rue road across from the ARC. At all other times report to Sutter Davis Hospital, 2000 Sutter Place, (530) 756-6440. *Note: All serious injuries must be reported to EH&S at (530) 752-1493 within 8 hours.*

Needle stick/puncture exposure (as applicable to chemical handling procedure)– Wash the affected area with antiseptic soap and warm water for 15 minutes. For mucous membrane exposure, flush the affected area for 15 minutes using an eyewash station. Go to the Occupational Health Facility (OHF) for employees, (530) 752-6051**,** in the Cowell Building on California Ave. Hours: M,T,Th,F, 8 a.m. to 5 p.m. and W from 9am to 5pm (the clinic is closed daily 12pm to 1pm for lunch) or Student Health and Counseling Services for students at (530) 752-2300 on La Rue road across from the ARC. At all other times report to Sutter Davis Hospital, 2000 Sutter Place, (530) 756-6440. *Note: All serious injuries must be reported to EH&S at (530) 752-1493 within 8 hours.*

Material Safety Data Sheet (MSDS) Location

Online MSDS can be accessed at

http://www.sigmaaldrich.com/safety-center.html

http://www.ucmsds.com

Decontamination/Waste Disposal Procedure

Wearing proper PPE, decontaminate equipment and bench tops using soap and water. Dispose of the used formaldehyde and disposables contaminated with formaldehyde as hazardous waste.

General hazardous waste disposal guidelines:

Label Waste

- Affix a hazardous waste label to container http://safetyservices.ucdavis.edu/ps/hmhwm/iwm/hwl/wastelbl3_08.doc as soon as the first drop of waste is added to the container

Store Waste

- Store hazardous waste in closed containers, in secondary containment and in a designated location
- Double-bag dry waste using transparent bags
- Waste must be under the control of the person generating & disposing of it

Dispose of Waste

- Dispose of regularly generated chemical waste within 90 days
- Call EH&S at (530) 752-1493 for questions
- Empty Containers
    - Dispose as hazardous waste if it once held extremely hazardous waste (irrespective of the container size) http://safetyapps.ucdavis.edu/EHS/wasterequest/index.cfm

  Prepare for transport to pick-up location
        - Check on-line waste tag
        - Write date of pick-up on the waste tag
        - Use secondary containment

Protocol/Procedure (Add lab specific Protocol/Procedure here)

Click here to enter text.

NOTE

Any deviation from this SOP requires approval from PI.

Documentation of Training (signature of all users is required)

- Prior to conducting any work with phenol, designated personnel must provide training to his/her laboratory personnel specific to the hazards involved in working with this substance, work area decontamination, and emergency procedures.
- The Principal Investigator must provide his/her laboratory personnel with a copy of this SOP and a copy of the SDS provided by the manufacturer.
- The Principal Investigator must ensure that his/her laboratory personnel have attended appropriate laboratory safety training or refresher training within the last one year.

Principal Investigator or Lab Supervisor SOP Approval

Print name

_____Signature_____

Approval Date:

I have read and understand the content of this SOP:

Name	Signature	Date
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