Chemical name/procedure Standard Operating Procedure

Revision: Insert Date

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Laboratory Director (LD) Approval is Required Prior to Performing this Procedure

Description [Provide additional information as it pertains to your research protocol]

Describe the process, hazardous chemicals, concentration, quantity required, and approximate frequency of use.

Process [Write the steps for using the chemical in your research protocol]

Potential Hazards [Provide additional information as it pertains to your research protocol]

State route of exposure (skin, inhalation, ingestion, injection) when/how exposure might occur (inhalation of gases/vapors, inhalation during weighing and mixing, splashes, cleaning up spills, etc.). Be sure to indicate if material is a gas, liquid, powder, pellet, etc. Hazards will be found in the SDS. Look for information on whether the chemical is flammable, corrosive, toxic, carcinogenic, pyrophoric, an irritant, etc.

Occupational Exposure Limits (OELs):

Provide OELs for chemicals.

Contact EHS for assistance in performing an exposure assessment.

Engineering Controls [Provide additional information as it pertains to your research protocol]

State the safety equipment that must be used (ex. chemical fume hood, Biological Safety Cabinet (BSC), laminar flow hood, vented ovens, furnaces, glove boxes, etc.). If this is a new process and the appropriate engineering controls do not seem to be available in the lab, discuss with lab staff whether the process can be done and how to obtain what is needed. If no engineering controls are needed please cite this fact. Consider if liquid form would be less hazardous than powder and, if so, purchase in liquid form. If possible, indicate that the chemical will be purchased in small quantities or dilute solutions to reduce the risk of exposure and minimize waste. If weighing powder and balance cannot be located in a fume hood or BSC, tare a container then add powder in the hood and cover before returning to the balance to weigh the

powder.

Work Practice Controls **[Provide additional information as it pertains to your research protocol]**

Describe work practices to be used that reduce exposure to hazardous chemicals. Describe required hand washing and the frequency for changing PPE. Describe additional safe work practices, such as keeping containers closed, working away from open flames, etc.

Personal Protective Equipment **[Provide additional information as it pertains to your research protocol]**

Describe PPE requirements for each task involving the chemical. (Examples: gloves, lab coat/gown, safety glasses/goggles, face shield, respirator, closed-toe shoes, and splash apron).

Note: Respirators are masks designed to protect the wearer from specific airborne hazards and are different from surgical masks, which protect the wearer only from splashes and are primarily intended to protect others from infectious aerosols exhaled by the wearer. Respirator use requires employee participation in the Respiratory Protection Program, which involves medical clearance and annual fit testing and training. Please be clear about use of surgical masks versus respirators. (Do NOT use the vague term "masks".)

Contact EHS for assistance in performing an exposure assessment.

Transportation and Storage **[Provide additional information as it pertains to your research protocol]**

Describe where you will store hazardous materials in the lab, e.g., solvent, acid, or base cabinet, refrigerator, etc. Be aware of incompatibility with other chemicals already in use in the lab. Chemical containers must be labeled with chemical name (& concentration, if diluted) and hazard warnings at a minimum. Describe transportation strategy (use of secondary containers, travel through low-traffic hallways). State chemical segregation strategies (list incompatibles).

Waste Disposal **[Provide additional information as it pertains to your research protocol]**

Provide guidance on how waste products are disposed of. Be specific and describe the specific disposal procedure to be used, i.e., do not write "Dispose of in accordance with applicable regulations".

Because most spent, unused, and expired chemicals/materials are considered hazardous wastes, they must be properly disposed of. **Do not dispose of chemical wastes by dumping them down a sink, flushing in a toilet or discarding in regular trash containers, unless authorized by Environment, Health & Safety Hazardous Materials Management (EHS-HMM)**. Contact EHS-HMM at (734) 763-4568 for waste containers, labels, manifests, waste collection and for any questions regarding proper waste disposal. Also, refer to the EHS Hazardous Waste Web page for more information.

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Exposures/Unintended Contact [Provide additional information as it pertains to your research protocol]

Describe what actions to take in an exposure incident i.e. leaving the area for inhalation hazards, removing contaminated clothing and/or PPE, flushing eyes and skin. Describe procedures to contact Occupational Health Services for medical advice on occupational exposures and completing the work-related injury and illness form.

⚠ ***If the employee is in need of emergency medical attention, call 911 immediately.*** ⚠

For a chemical exposure/injury:

Injury Type	Action	Notes
Exposure-Eyes	1. Flush with water for at least 15 minutes 2. Seek medical attention.	Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Exposure-Skin	1. Remove contaminated clothing and footwear. 2. Flush with water for at least 15 minutes. 3. Remove contaminated clothing. 4. Seek medical attention.	Indicate if contaminated clothing can be laundered for reuse or must be discarded as hazardous waste.
Inhalation (including from spills outside the fume hood)	1. Remove patient from the contaminated area. 2. Encourage patient to blow nose to ensure clear breathing passages. 3. Ask patient to rinse mouth with water but to not drink the water. 4. Seek medical attention	
Ingestion	1. If swallowed, refer for medical attention, where possible, immediately.	Urgent hospital treatment is likely to be needed.
NOTE: If an ambulance is needed, call the University of Michigan Division of Public Safety and Security (DPSS) at 911 to request assistance.		

Report all work related accidents, injuries, illnesses or exposures to Work Connections within 24 hours by completing and submitting the Illness and Injury Report Form.

Follow the directions on the Work Connections website Where to go for treatment to obtain proper medical treatment and follow-up.

Complete the Incident and Near-Miss Report form.

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Treatment Facilities

U-M Occupational Health Services -- Campus Employees
Mon-Fri 7:00 am - 4:30 pm
C380 Med Inn building
1500 East Medical Center Drive, Ann Arbor (734) 764-8021

University Health Services -- University students (non-life threatening conditions)
Mon-Fri 8 am - 4:30 pm, Sat 9 am - 12 pm
Contact for current hours, as they may vary
207 Fletcher Street, Ann Arbor (734) 764 - 8320

UMHS Emergency Department -- after clinic hours or on weekends
1500 East Medical Center Drive, Ann Arbor (734) 936-6666

Spill Procedure **[Provide additional information as it pertains to your research protocol]**

Describe how employees should handle spills. Are there specific absorbents that should be used? If it's a gas leak, what do you do when the detectors go off? Be specific. Are there specific concerns to be considered in the event of a fire? For example, some chemicals are water reactive, and using water on a fire where these chemicals are involved will make the problem worse.

A **minor (small) chemical spill** is one that the laboratory staff is capable of handling safely without the assistance of safety and emergency personnel. In the event of a minor chemical spill, use the following information for a safe spill response.

- Alert people in immediate area of spill.
- If spilled material is flammable, turn off ignition and heat sources. Don't light Bunsen burners or turn on other switches.
- Open outside windows, if possible.
- Wear protective equipment, including safety goggles, gloves and long-sleeve lab coat.
- Avoid breathing vapors from spill.
- Confine spill to as small an area as possible.
- **Do not wash spill down the drain**.
- Use appropriate spill kits/sorbents to neutralize corrosives and/or absorb spill. Collect contaminated materials and residues and place them in containers. For powdered chemicals, sweep carefully to avoid generation of dust or, if appropriate, use moist sorbent pads or wet the powder with a suitable solvent and then wipe with a dry cloth. Label and manifest waste and contact EHS-HMM (734) 763-4568 for proper disposal.
- Clean spill area with water.

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A **major (large) chemical spill** requires active assistance from emergency personnel. Report large spills in corridors or common areas, e.g., hallways, elevators, eating areas, restrooms, offices, etc., to University of Michigan Division of Public Safety and Security (DPSS) at 911.

Do not attempt to clean up a major chemical spill or one that occurs outside a fume hood. In the event of a major chemical spill, use the following information for a safe spill response.

- Attend to injured or contaminated persons and remove them from exposure.
- Alert people in the laboratory to evacuate.
- If spilled material is flammable, turn off ignition and heat sources. Don't light Bunsen burners or turn on other switches.
- **Call University of Michigan Division of Public Safety and Security (DPSS) at 911 immediately for assistance.**
- Close doors to the affected area.
- Post warnings to keep people from entering the area.
- Have a person available that has knowledge of the incident and laboratory to assist emergency personnel.

For additional information regarding spill response procedures, refer to the EHS Hazardous Waste Spill Response Web page.

Emergency Reporting

Report all emergencies, suspicious activity, injuries, spills, and fires to the University of Michigan Police (DPSS) by calling 911 or texting 377911. Register with the University of Michigan Emergency Alert System via Wolverine Access.

Training of Personnel

All personnel shall read and fully adhere to this SOP when handling this chemical.

Certification

I have read and understand the above SOP. I have received approval from my Lab Director to perform this procedure. I agree to contact my Lab Director if I plan to modify this procedure.

NAME	SIGNATURE	UMID #	DATE

Lab Director:	
Revision Date:	

Revision History (only to be included on documents longer than 25 pages, or manuals)		
Date	Issue Date	Description of what was changed