Standard Operating Procedure

2-Mercaptoethanol / -mercaptoethanol

Section 1 – Lab-Specific Information

Building/Room(s) covered by this SOP: **FTR 209**

Unit or department: **School of Aquatic & Fishery Sciences**

Principal Investigator Name: **Steven Roberts**

Principal Investigator Signature/Date:

Section 2 – Hazards

2-Mercaptoethanol is extremely toxic if swallowed or inhaled and can be fatal if absorbed through the skin. It is corrosive and can cause severe burns to the skin and eyes. It is also a combustible liquid. This compound is extremely toxic to aquatic life and has long-lasting effects in the environment. Additionally, it has an extremely unpleasant odor that can be detected at very low concentrations (stench chemical).

Exposure Limits:

OSHA PEL (8 HR. TWA): 0.2 ppm

Section 3 – Engineering Controls and Personal Protective Equipment (PPE)

Engineering Controls: Use of 2-mercaptoethanol must be conducted in a properly functioning chemical fume hood. The chemical fume hood must be tested and passed by EH&S.

Hygiene Measures: Avoid contact with skin, eyes, and clothing. Wash hands after removing PPE, before breaks, and immediately after handling the chemical. If chemical comes into contact with any PPE, the PPE shall be immediately removed and discarded properly. Any potentially exposed body parts should be washed immediately.

Skin and body protection. Chemically compatible laboratory coats that fully extend to the wrist must be worn and be appropriately sized for the individual and buttoned to their full length. Personnel must also wear full-length pants, or equivalent, and close-toe shoes. The area of skin between the shoe and ankle must not be exposed.

Hand Protection: Chemical-resistant gloves must be worn. Nitrile gloves are recommended. Wearing two pairs of nitrile gloves is recommended. Contaminated gloves (even just a few drops) must be disposed of as hazardous waste (due to odor).

Gloves must be inspected prior to use, including a check for pinholes.

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 immediately after glove removal.

Eye Protection: ANSI approved properly fitting safety glasses or chemical splash goggles are required. . Ordinary prescription glasses will NOT provide adequate protection unless they also meet the Z87.1 standard and have compliant side shields. A face shield may also be appropriate depending on the specific application.

Respiratory Protection: 2-Mercaptoethanol should not be used outside of a chemical fume hood or glove box; therefore respiratory protection should not be required. If use outside of a fume hood or other appropriate ventilation systems is necessary, contact EH&S at 206.616.3777 so a respiratory protection analysis can be performed.

Section 4 – Special Handling and Storage Requirements

- Do not over purchase; only purchase what can be safely stored in the laboratory.
- Avoid contact with skin, eyes, and clothing. Avoid inhalation of vapor or mist.
- Always use inside of a chemical fume hood. 2-Mercaptoethanol has an unpleasant odor at extremely low concentrations. Therefore, extreme care should be taken when handling; always work with under a chemical fume hood.
- Keep container upright and tightly closed in a dry and well-ventilated place. Containers should remain closed when not in use. A vented chemical cabinet is recommended. Consider using a secondary sealed container (over pack) to minimize odors.
- Containers which are opened must be carefully resealed and kept upright to prevent leakage. If a spill occurs outside of a chemical fume hood, make sure that everyone is aware of the spill and that it is cleaned up immediately. 2-Mercaptoethanol is often mistaken for a natural gas leak, therefore it is extremely important that people are aware of the spill and that it is cleaned up immediately.

- Keep away from incompatible materials: oxidizing agents and metals, such as aluminum, stainless steel, iron and copper.
- Use in the smallest practical quantities for the experiment being performed.
- Containers should be labeled appropriately. Label should indicate the name of the chemical(s) in the container. Avoid using chemical abbreviations and formulae.
- Dispose of any expired or unnecessary materials as hazardous waste.

Section 5 – Spill and Accident Procedures

2-Mercaptoethanol has an unpleasant odor at extremely low concentrations, therefore can be a problem if even a small spill occurs outside of a chemical fume hood. If a small spill occurs that causes an odor issue, open the lab chemical fume hood sashes to maximize flow, leave the lab and make sure the exterior lab door remains closed (do not prop open) to allow proper negative pressure ventilation of the lab.

Chemical spills must be cleaned up as soon as possible by properly protected and trained personnel. All other persons should leave the area.

Clean up spills using contents of the laboratory spill kit: absorbent pads

Do **not** attempt to clean up any spill if **not** trained or comfortable. Evacuate the area and call 9-1-1 on campus phone for help. If the spill is out of control, call 9-1-1. If a person is injured, exposed or suspected of being exposed, call 9-1-1 and follow the EXPOSURE PROCEDURES (below).

Spill area must be cleaned up in the following manner: clean spill area thoroughly with detergent solution followed by clean water.

Spill cleanup materials must be disposed of in the following manner: double bag all waste in plastic bags labeled with the contents. Submit request to EH&S for pickup.

For questions on spill cleanup, contact EH&S spill consultants at 206-543-0467 during normal business hours (Monday-Friday, 8 a.m. to 5 p.m.).

Any spill, exposure or near miss incident requires the involved person or supervisor to complete and submit the Online Accident Reporting System (OARS) form on the EH&S website within 24 hours (certain types of incidents require immediate notification) at oars.ehs.washington.edu.

Exposures: If a person is injured, exposed, or suspected of being exposed to 2-mercaptoethanol, follow procedures listed here:

Perform first aid immediately.

- **Inhalation exposure**: Move out of contaminated area; get medical help.
- **Sharps injury** (needle stick or subcutaneous exposure): Scrub exposed area thoroughly for 15 minutes using warm water and sudsing soap.
- **Skin exposure:** Use the nearest safety shower for 15 minutes; stay under the shower and remove clothing; use a clean lab coat or spare clothing for cover-up.

- **Eye exposure:** Use the eye wash for 15 minutes while holding eyelids open.

Get Help.

- **Call** 9-1-1 or go to nearest Emergency Department (ED); provide details of exposure:
  - Agent
  - Dose
  - Route of exposure
  - Time since exposure
- **Bring the SDS and this SOP** to the Emergency Department
- **Notify your supervisor** as soon as possible for assistance
- **Secure the area** before leaving; lock doors and indicate spill if needed

Report the incident to Environmental Health & Safety.

- **Notify EH&S immediately** after providing first aid and/or getting help.
  - During business hours (M-F/8-5), call 206-543-7262.
  - Outside of business hours, call 206-685-UWPD (8973) to be routed to EH&S Staff On Call.
- The involved person or supervisor submits the UW Online Accident Reporting System (OARS) form on the EH&S website within 24 hours (certain types of incidents require immediate notification) at oars.ehs.washington.edu.

Section 6 – Waste Disposal Procedures

Hazardous chemical waste must be collected for proper waste disposal by EH&S (sink disposal is not permitted). Store hazardous waste in closed containers that are properly labeled, and in a designated area (flammable cabinet is recommended) away from incompatible chemicals such as aqueous solutions. 2-Mercaptoethanol waste has a very unpleasant odor; care should be taken when handling waste solutions as well. If practicable, do not mix 2-mercaptoethanol waste with other organic waste, collect separately if possible. Contaminated debris (e.g., gloves, Kim wipes, etc.) generated while working with 2-mercaptoethanol must also be collected as hazardous waste (due to odor).

Accumulate waste at the point of generation in a sturdy, [compatible container], with a securely-closable/screw-top lid.

All chemical waste containers must be labeled with a UW Hazardous Waste Label. Refer to How to Label Chemical Waste Containers.

To request a collection of chemical waste, submit a form on the Chemical Waste Disposal webpage on the EH&S website or directly in MyChem inventory. Contact EH&S at 206.616.5835 or chmwaste@uw.edu with questions.

Work area decontamination procedures as appropriate for the chemical in use should be followed.

Section 7 – Protocol/Procedure

NOTE: Any deviation from this SOP requires approval from Principal Investigator.

Section 8 – Special Precautions for animal use (___Yes X No)

N/A

PARTICULARLY HAZARDOUS SUBSTANCE INVOLVED?	**_X_ YES:**	**Sections #9 to #11 are Mandatory**

EH&S flags Particularly Hazardous Chemicals in MyChem based on hazards.

Section 9 – Approvals required

All staff working with 2-mercaptoethanol must be trained on this SOP prior to starting work. They must also review the 2-mercaptoethanol SDS, and it must be readily available in the laboratory. All training must be documented and maintained by the PI or their designee.

Section 10 – Decontamination

Wash with water and dry.

Section 11 – Designated area

Fume hood

Section 12 – Documentation of training

- Prior to using substances included in this SOP, laboratory personnel must be trained on the hazards described in 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 in the lab space(s) where these substances are used.

- The Principal Investigator (PI), or Responsible Party, if the activity does not involve a PI, must ensure that their laboratory personnel have attended appropriate laboratory safety training (and refresher training where applicable).
- 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.

I have read and understand the content of this SOP:

Name	Signature	Date
Sam White		**09-30-2025**