

Principal Investigator:

Date Approved:

This document covers basic chemical safety protocols (CSP) for tetramethylammonium hydroxide (TMAH) and supplements the laboratory Chemical Hygiene Plan as appropriate. Additional lab-specific safety operating procedures for TMAH may also be required. The use of any TMAH is subject to pre-approval by the Principal Investigator (PI) and/or the designated Laboratory Responsible Safety Person. DO NOT USE ANY TMAH UNTIL YOU HAVE OBTAINED THE NECESSARY PRE-APPROVAL AND TRAINING.

Tetramethylammonium Hydroxide

Tetramethylammonium hydroxide (TMAH) is a quaternary ammonium strong base commonly used for etching. It is a corrosive and acute toxicant.

Exposures can cause severe eye damage and/or skin burns. Dermal exposures to concentrations as low as 25% have resulted in deaths in at least three instances since 2007. Two of the recorded fatalities occurred due to heart attack despite immediate decontamination and prompt medical care.



Personal Protective Equipment & Personnel Monitoring



Lab Coat

Wear a traditional white lab coat. If your protocol also involves flammable materials, wear a lab apron over a flame-resistant lab coat.



Gloves

Nitrile gloves typically provide adequate protection against minor splashes. Consult with your PI or supervisor to determine whether any materials involved in your process require alternative hand protection.



Eye Protection

ANSI Z87.1-compliant safety glasses, or safety goggles if a splash hazard is present. If large amounts are being handled consider using a face shield.

Labeling & Storage

Store in secondary containment away from acids, oxidizing agents and any other materials that may be chemically incompatible. Each container's label must include appropriate pictograms and identify the material as both acutely toxic and corrosive. Containers of TMAH must be stored in leak-proof secondary containment within a Designated Area. The secondary container's label must include appropriate pictograms and identify the material as both acutely toxic and corrosive. Also, if not plainly visible (e.g. through a cabinet window), labelling must be applied to storage locations where these are stored to avoid an inadvertent encounter.

Engineering Controls, Equipment & Materials

Fume Hood

It is advisable to use a fume hood when performing any operation which could aerosolize TMAH. If your protocol does not permit the handling of such materials in a fume hood, contact Office of Environment, Health, Safety, and Sustainability (EHSS) to determine whether additional respiratory protection is warranted.

Housekeeping

Spills	Notify others in the area of the spill, including your PI/Responsible Safety Person. If it is a small spill that you can easily handle, use the contents of your lab spill kit to clean it up. If it is a large spill, then evacuate the area where the spill occurred. Call Vanderbilt University Public Safety (VUPS) at 615-421-1911 or use the Vandy Safe app on your smart phone. Report any exposure through Risk and Insurance Management's Origami portal and mark that it occurred in research when prompted. Both VUPS and the Origami system will notify EHS of the incident. Remain on-site at a safe distance to provide detailed information to first responders.
Decontamination	Decontaminate all work surfaces and equipment which may come into contact with TMAH with soap and water. Test wet surfaces with pH paper to verify complete decontamination.
Waste	Refer to the laboratory <i>Chemical Hygiene Plan</i> (Section 6.7) for information on proper chemical waste disposal procedures.

First Aid & Emergencies

Skin Contact	Immediately remove contaminated clothing and shoes; flush skin with water for at least 15 minutes. Get medical attention immediately.
Eye Contact	Check for and remove contact lenses. Immediately flush eyes with water for at least 15 minutes. Get medical attention immediately.
Inhalation	Without putting yourself at risk, move person into fresh air. Get medical attention immediately.
Ingestion	Get medical attention immediately.

