UNIVERSITY OF NORTH CAROLINA CHARLOTTE | ENVIRONMENTAL HEALTH & SAFETY

Standard Operating Procedure

Osmium Tetroxide

Principal Investigator: _____ ***Date Approved:*** _____

This document covers basic chemical safety information for osmium tetroxide. The use of osmium tetroxide is subject to pre-approval by the Principal Investigator (PI) and/or Supervisor. PI and/or Supervisor may use the sheet attached to this SOP to document any lab specific training for Osmium Tetroxide. DO NOT USE OSMIUM TETROXIDE UNTIL YOU HAVE OBTAINED THE NECESSARY PRE-APPROVAL.

Osmium Tetroxide

(OsO_4) is an acutely toxic, corrosive solid that is used as an organic synthesis reagent, a stain for electron microscopy, and a fixative for biological samples. Osmium tetroxide can penetrate plastics and sublimes at room temperature and atmospheric pressure. It can be fatal if ingested, inhaled, or absorbed through the skin. Osmium tetroxide causes severe skin burns and eye damage. Specifically, OsO_4 can stain the cornea of the eye and cause blindness.

Personal Protective Equipment & Personnel Monitoring			
 **Lab Coat**	 **Gloves**	 **Eye Protection**	 **Face Shield**
Traditional lab coat or flame-resistant lab coat when working with flammable materials	Two pairs of neoprene gloves. If the glove is chemically exposed, the outer glove must be removed and replaced immediately.	ANSI Z87.1-compliant safety goggles, or a face shield if a splash hazard is present	

Labeling & Storage

Store in glass at sub-ambient temperatures and keep containers tightly closed to limit sublimation. **DO NOT** use plastic containers. Keep in a dry, well-ventilated place. Primary containers should be labeled according to the UNC Charlotte Chemical Hygiene Plan. The secondary container's label must contain the chemical name and corresponding hazards. Osmium tetroxide containers must be stored in leak-proof secondary containment within a Designated Area. Also, if not plainly visible (e.g. through a cabinet window), labeling must be applied to storage locations where these are stored to avoid an inadvertent encounter. Incompatibilities include strong reducing agents, organic materials, powdered metals, and hydrochloric acid. Contact will cause formation of poisonous chlorine gas.

Engineering Controls, Equipment & Materials

Fume Hood

Use a fume hood to keep exposure to osmium tetroxide vapors as low as possible. If your protocol does not permit the handing of this chemical in a fume hood, contact EHS to determine whether additional respiratory protection is warranted.

Housekeeping

Spills

Notify others in the area of the spill, including your supervisor. Evacuate the location where the spill occurred. Call 911 from any campus phone (or 704-687-2200 from a cell phone). Report any exposure to EHS at 704-687-1111. Remain on-site (at a safe distance) to provide detailed information to first responders.

Decontamination

Clean contaminated surfaces with soap and water. Dispose of contaminated paper towels as solid hazardous waste.

Waste

Refer to the UNC Charlotte Chemical Hygiene Plan for details. This substance is considered 'extremely hazardous' when disposed as waste.

First Aid & Emergencies

Skin Contact

Immediately remove contaminated clothing and shoes and flush skin with water for at least 15 minutes. Get medical attention immediately. *Serious skin contact: Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Eye Contact

Check for and remove contact lenses. Immediately flush eyes with water for at least 15 minutes. Get medical attention immediately.

Inhalation

Move person into fresh air. Get medical attention immediately.

Ingestion

Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Get medical attention immediately.

Name	Signature	Date