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

This document covers basic chemical safety information for tetranitromethane. The use of any tetranitromethane 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 Tetranitromethane. DO NOT USE TETRANITROMETHANE UNTIL YOU HAVE OBTAINED THE NECESSARY PRE-APPROVAL.

Tetranitromethane

Tetranitromethane (TNM, $C(NO_2)_4$) is a light yellow, oxidizing liquid with a high potential for causing fires or explosions. Inhalation of this toxic substance causes the lungs to fill with fluid, which can be fatal (LC50 = 18 ppm). It is also anticipated to be carcinogenic. The likelihood of TNM detonating is greatly increased in the presence of impurities - even at low concentrations - or when combined with equal parts fuel. At high pH and moisture levels TNM converts to trinitromethane - which then reacts with metals to form highly unstable and explosive salts.

TNM is used in laboratory settings as a nitrating reagent or to test for the presence of double bonds in organic compounds.

Personal Protective Equipment & Personnel Monitoring			
 **Lab Coat**	 **Gloves**	 **Eye Protection**	 **Face Shield**
Flame resistant lab coat.	Nitrile or neoprene gloves.	ANSI Z87.1-compliant safety glasses or safety goggles. Consider using a face shield and/or blast shield for extra protection, especially if heating.	

Labeling & Storage

Store tightly sealed at 2 - 8 °C in an explosion-proof refrigerator. Do not store with flammables, combustibles, reducing agents, bases, metals, or organic materials. Keep away from heat, light, and any potential initiating mechanisms. 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. Containers of TNM must be stored in leak-proof secondary containment within a designated area. 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

Work in a chemical fume hood whenever possible. Keep the sash at the lowest practical height while working, and close the sash when the fume hood is not in use. 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.

Blast Shield

When working with TNM the use of a portable blast shield inside the fume hood is highly recommended.

Cautions & Considerations

Initiating Mechanism

Before working with tetranitromethane, remove from the work area all items that could inadvertently lead to an explosion via friction, impact, flammability/combustibility, light, or heat. Also consider working with equipment that cannot generate static electricity or sparks.

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

Decontaminate equipment and work surfaces which may have come into contact with TNM using soap and water.

Waste

Collect spent material in sealed containers protected from light and heat, and dispose of as hazardous waste.

First Aid & Emergencies

Skin or Eye Contact

Remove contaminated clothing and accessories; flush affected area with water. If symptoms persist, get medical attention.

Inhalation

Without putting yourself at risk, move person into fresh air. Get medical attention immediately.

Name	Signature	Date