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

This document covers basic chemical safety information for acutely toxic gases. The use of any acutely toxic gas 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 Acutely Toxic Gases. DO NOT USE FLAMMABLES UNTIL YOU HAVE OBTAINED THE NECESSARY PRE-APPROVAL.

Acutely Toxic Gases

Acutely toxic gases include any gas with a median lethal concentration (LC50) of 500 ppm or less. Many acutely toxic gases act by reacting with water found in the mucous membranes of the lungs and eyes to produce toxic or corrosive byproducts.

Examples of acutely toxic gases include cyanogen chloride, boron trichloride, trifluoroacetonitrile, and hexafluoroacetone.

Personal Protective Equipment & Personnel Monitoring		
 **Lab Coat**	 **Gloves**	 **Eye Protection**
Flame resistant lab coat.	For proper glove selection, review the chemical safety data sheet and consult glove manufacturer recommendations with your PI or supervisor.	ANSI Z87.1-compliant safety glasses or safety goggles.

Labeling & Storage

Acutely toxic gases must be stored in a toxic gas cabinet or exhausted enclosure away from combustible materials.

Ensure compressed gas cylinders are in an upright position to prevent tipping and rolling. This can be achieved by using a strap or chain 1/3 from the top of the cylinder. Alternatively, use a cylindrical casing to secure the cylinder within the exhausted enclosure next to your experimental setup. Refer to American Society of Mechanical Engineers code for Process Piping, ASME B31.3, to select compliant piping.

WHAT NOT TO DO: Never store cylinders on transportation carts. Never store cylinders with regulators still attached, instead remove the regulator and replace with the safety cap. Never use a cylinder without a regulator. Never permit the gas to enter the regulator suddenly. Never try to stop a leak between a cylinder and regulator by tightening the union nut unless the cylinder valve has been closed first. Never strike an electric arc on the cylinder.

Engineering Controls, Equipment & Materials

Fume Hood

If you have any reason to believe that your protocol may generate fugitive toxic gases (e.g. an open system which terminates outside of a fume hood or other exhausted enclosure), contact EHS to determine whether alternative engineering controls and/or additional respiratory protection is warranted.

Ordering & Disposal

As of *July 1st 2022, Receiving & Stores will no longer coordinate the cylinder gas program for campus departments.* Beginning on July 1, departments will enter requisitions for cylinder gases into 49er Mart directly to the mandatory State Term Contract #1214A vendors, Airgas or ARC3 Gases, and deliveries/pickups will be made by the vendors directly to the department. Any order or service issues should be communicated directly to the vendor supplying the cylinder gas, or to the Purchasing Office who will assist the department with any issues encountered.

First Aid & Emergencies

Releases

Immediately notify others in the area of the release, including your supervisor. Evacuate the location where the release 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.

Skin or Eye Contact

Without putting yourself at risk, move person into fresh air. Remove contaminated clothing and accessories; flush affected area 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.

Name	Signature	Date