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

This document covers basic chemical safety information for corrosive flammable gases. The use of any corrosive flammable 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 Corrosive Flammable Gases. DO NOT USE ANY CORROSIVE FLAMMABLE GAS UNTIL YOU HAVE OBTAINED THE NECESSARY PRE-APPROVAL.

Corrosive Flammables Gases

Flammable gases are gases which are ignitable at a concentration in air of ≤13% (v/v), or have a flammable range in air of at least 12 percentage points regardless of the lower flammable limit, at 20 °C and 1 atm. Corrosive flammable gases can cause skin and eye damage upon exposure. These substances are also capable of causing destruction of mucous membranes in the lungs, making them toxic or harmful by inhalation (LC50 ≥ 2000 ppm).

Examples of corrosive flammable gases include ammonia and methylamines.

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

It is prudent to provide local exhaust ventilation for large cylinders containing corrosive flammable gases (e.g., a toxic gas cabinet or snorkel). All corrosive flammable gases must be stored away from combustible materials, oxidizing substances, and ignition sources. OSHA regulation 1910.253(b)(4)(iii) requires that combustible cylinders in storage be separated from oxidizing gas cylinders by a minimum distance of 20 feet or by a noncombustible barrier at least five feet high and with a fire resistance rating of least one-half hour.

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

Local Exhaust Ventilation

If you have any reason to believe that your protocol may generate fugitive corrosive flammable gases (e.g., an open system which terminates outside of a fume hood), contact EHS to determine whether 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 and evacuate the location where the release occurred. If venting or leaking gas catches fire, **DO NOT** attempt to extinguish flames. Notify your supervisor and 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

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

Inhalation

Move person into fresh air. If symptoms persist, get medical attention.

Name	Signature	Date