Flammable Gases

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

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

Flammable Gases

Flammable gases are gases which are ignitable at a concentration in air of ≤13% (v/v), or have a flammable range inair of at least 12 percentage points regardless of the lower flammable limit, at 20 °C and 1 atm.

Examples of flammable gases include hydrogen and methane.

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 safety goggles.

Labeling & Storage

Store flammable gases 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 to the floor 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 your protocol does not permit the handling of these materials in a fume hood, contact EHS to determine whether alternative engineering controls are 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

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.

Release

Immediately notify others in the area of the release and evacuate the room. If venting or leaking gas catches fire, **DO NOT** attempt to extinguish flames. If your lab is equipped with an emergency electrical shutoff, activate it as you exit (Note: this **DOES NOT** include a circuit breaker, which can arc when switched). 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.

Name	Signature	Date