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

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

Compressed Gases

Compressed gases are gases which are stored above atmospheric pressure in metal cylinders. The main hazard when working with high-pressure apparatuses is the possibility of explosion due to equipment failure. Many compressed gases are also considered to be simple asphyxiants due to their ability to displace oxygen in the event of their rapid release.

Examples of compressed gases include nitrogen, argon, and carbon dioxide.

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

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.

Remove regulators from cylinders when not in use and replace with the safety cap. Keep oxygen stored away from all flammables, oil products, and grease (at least 20 feet away). Fuel gases and oxidizers must be separated by at least 20 feet, or a noncombustible wall at least 5 feet high with at least a half-hour fire rating. Ensure empty cylinders are labeled "**EMPTY**". Separate empty gas cylinders from full gas cylinders.

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. Do not drag or roll cylinders horizontally. 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 or other containment device, contact EHS to determine whether additional respiratory protection is warranted.

Oxygen Sensor

Oxygen sensors may be necessary in rooms where large quantities of compressed gases are stored or handled. Never enter a room if an oxygen sensor is in alarm.

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

Inhalation

If you suspect that a person has lost consciousness due to oxygen deprivation, call 911 and **DO NOT** enter the room. Move person into fresh air only if safe to do so. If symptoms persist, get medical attention.

Name	Signature	Date