

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. 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**

Traditional lab coat.



**Gloves**

For proper glove selection, review the chemical safety data sheet and consult glove manufacturer recommendations with your PI or supervisor.



**Eye Protection**

ANSI Z87.1-compliant safety glasses or safety goggles.

## Labeling & Storage

Compressed gas cylinders should be chained to a stable structure, such as a wall with no more than three cylinders of equal size secured with a single set of chains. The chain should be 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. Minimize usage of table/bench clamps for securing cylinders. 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. Remove regulators from cylinders when not in use 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 or other containment device, contact the Department of Environmental Health, Safety and Sustainability (EHSS) 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.

## Housekeeping

**Waste**

If the vendor does not have a method to return/refill a cylinder, refer to the laboratory *Chemical Hygiene Plan* (Section 6.7) for information on proper chemical waste disposal procedures.

## First Aid & Emergencies

**Inhalation**

If you suspect that a person has lost consciousness due to oxygen deprivation notify your PI/Responsible Safety Person and call 615-421-1911 or use the VandySafe app 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

