# SMU EHS Standard Operating Procedure for use of COMPRSSSED GASES

Examples: nitrogen, argon, oxygen, hydrogen, compressed air, acetylene, carbon dioxide

## HAZARDS

### Potential Hazards
- The large amount of **pressure** contained makes gas cylinders a potential rocket or bomb if the cylinder or valve fails.
- Gases may be flammable, corrosive, oxidizing, toxic, and/or irritating. They may also cause asphyxiation.
- See **Safety Data Sheet** (SDS) for specific hazard information.

## HAZARD CONTROLS

### Selection and Purchase
- Purchase the **smallest cylinders** at the **lowest concentration** practical.
- Order with a **restrictive flow orifice** to limit gas flow rate leaving the cylinder.
- Order with a **pressure relief device** to allow safe venting if excessive pressure develops.

### Storage and Transportation
- **Store upright and secure** with sturdy chains or straps (between midpoint and shoulder) to a wall, or use a cylinder rack, bench mount, or stand.
- **Keep valves closed** (with **valve covers on**) when not in use.
- **Store separately:**
  - Full away from empty cylinders. (Label as full or empty.)
  - Oxidizing gases (such as oxygen) away from flammable gases.
- **Post storage area** for flammable gases or oxygen with “No Open Flames” sign.
- **Do not store near flammable materials.**
- **Do not store above 125° F or in direct sunlight**, or outside of the temperature range specified by the manufacturer.
- **Do not store in cold rooms** or other unventilated areas.
- Transport with **valve cover on** using a **cylinder dolly**. Secure cylinder during transport. Use a helper if possible.

### Engineering Controls
- For flammable gases, use a **flashback arrestor** between regulator and hose.
- Consider a **ventilated gas cabinet** or **chemical fume hood** for flammable or irritating gases, depending on quantities used.

### Work Practice Controls
- **Properly rated and compatible regulators** should be used to regulate flow. Cylinder valves should not be used to regulate flow.
- **Properly rated and compatible tubing and piping** must be used at all times

### Personal Protective Equipment (PPE)
- Minimum PPE:
  - Safety glasses
  - Closed-toe shoes when moving cylinders

## OTHER

### Waste
- Return cylinders and unused gas to vendor.

### Training
- Sign **Laboratory Specific Training** document to indicate understanding of this SOP.

### Questions
- Contact Environmental Health and Safety at 214-768-2430.

### Additional Guidelines
- Please complete page 2 for additional laboratory-specific guidelines
Laboratory-specific gases and procedures: