

Augusta University

Policy Library

Compressed Gas Cylinder Policy

Policy Manager: Environmental Health and Safety Division

POLICY STATEMENT

Augusta University shall protect persons and property from hazards presented by the use, handling, storage, and transportation of compressed gas cylinders.

REASON FOR POLICY

Compressed gases present unique hazards. Depending upon the particular gas, there is a potential for simultaneous exposure to both mechanical and chemical hazards. Gases may be flammable or combustible, explosive, corrosive, poisonous, inert, or a combination of these hazards. Many industrial and laboratory operations require the use of compressed gases.

Mishandled compressed gas cylinders can rupture violently or release hazardous, potentially lethal gases into laboratories and other occupied spaces. Procedures are necessary for safe handling of compressed gases, cylinders containing compressed gases, regulators or valves used to control gas flow, and piping used to confine gases during flow, to ensure the safety of personnel and property.

AFFECTED STAKEHOLDERS

Indicate all entities and persons within the Enterprise that are affected by this policy:

- Alumni Faculty Graduate Students Health Professional Students
 Staff Undergraduate Students Vendors/Contractors Visitors
 Other:

DEFINITIONS

- **Compressed Gas:** A compressed gas is any gas which when enclosed in a container gives:
 - an absolute pressure reading greater than 276 kPa (40 psi) at 21°C (70°F) or (C=Celsius, F=Fahrenheit)
 - an absolute pressure greater than 717 kPa (104 psi) at 54°C (129.2°F) or
 - any flammable liquid having a vapor pressure greater than 276 kPa (40 psi) at 38°C (100.4°F).
- **Compressed Gas Cylinder:** A compressed gas cylinder is any metal cylinder of the type approved by the U.S. Department of Transportation (DOT) for storage and transportation of gases under pressure, including liquefied gases. Metal cylinders are the only approved DOT packaging for compressed gases.
- **Manifold:** A gas distribution system which transfers product through multiple outlets/inlets to or from compressed gas containers.

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- **Pressure Regulator:** A mechanical device used to safely control the discharge pressure of a compressed gas from a container.
- **Pressure Relief Device:** A pressure and/or temperature activated device used to prevent the pressure from rising above a predetermined maximum and thereby prevent rupture of a pressurized container.

PROCESS & PROCEDURES

1. Compressed gas cylinders should be handled only by those familiar with the hazards and who are trained in the proper handling techniques. Know and understand the gases and associated equipment. Training can be obtained by attending the initial chemical safety training conducted by Environmental Health and Safety.
2. Refer to the suppliers Safety Data Sheet to determine the proper personal protective equipment (PPE) and any other special requirements for the gas being used.
3. Gas cylinders shall be secured at all times to prevent tipping, falling, or rolling. Secure with straps or chains connected to a wall bracket or other fixed surface, or by use of a cylinder stand.
4. Store gas cylinders in a cool, dry, well-ventilated, fire resistant area that meets all applicable federal, state, and local regulations.
5. Gas cylinders shall be transported using hand trucks designed for that purpose and the cylinder should be secured so that it does not tip, fall, or roll.
6. When a gas cylinder is empty or not being used, close the valve, remove the regulator, and secure the valve protector cap.
7. Visually inspect stored cylinders on a routine basis for indication of leakage or other problems.
8. In occupied spaces (e.g., laboratories) one spare cylinder is authorized for each in-service cylinder connected directly to a process. The spare cylinder shall be stored adjacent to the in-service cylinder.
9. No spare cylinders are authorized in a workspace where multiple cylinders are connected to a process through a manifold.
10. Always use a pressure regulator or separate control valve to safely discharge gas from a cylinder. Use regulators and pressure-relief devices when connecting cylinders to piping circuits with lower pressure service ratings.
11. Detailed instructions are available in the Chemical and Laboratory Safety Guide, referenced below.

REFERENCES & SUPPORTING DOCUMENTS

Augusta University Chemical and Laboratory Safety Guide at:

<https://www.augusta.edu/services/ehs/chemsafe/documents/chemical-safety-guide0717.pdf>

- Appendix H - Compressed Gas Cylinders
- Appendix I – Cryogenic Liquids Standard Operating Procedure
- Appendix J – Liquid Nitrogen Safety

General chemical safety information is available at the Chemical & Laboratory Safety Program web page: <https://www.augusta.edu/services/ehs/chemsafe/clsprog.php>

RELATED POLICIES

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APPROVED BY:

Executive Vice President for Academic Affairs and Provost, Augusta University

Date: 12/1/2022

President, Augusta University

Date: 12/1/2022