This document contains basic guidelines to help ensure the safe handling and storage of compressed gas cylinders. Compressed gases are used in a variety of Centre College programs. Compressed gases serve the college in many ways but gases under high pressure also present a number of hazards. This gas cylinders safety contains information on the proper storage, handling, use and disposal of compressed and liquefied gas cylinders. Most of the information is general and applies to all compressed and liquefied gases.

GAS CYLINDER BASICS

Compressed gases present a unique hazard. Depending on the particular gas, there is a potential for simultaneous exposure to both mechanical and chemical hazards. Gases may be: flammable, explosive, corrosive, poisonous, inert or a combination of hazards. If the gas is flammable, flash points lower than room temperature compounded by high rates of diffusion present a danger of fire or explosion. Additional hazards of reactivity and toxicity of the gas, as well as asphyxiation, can be caused by high concentrations of even “harmless” gases such as nitrogen. Since the gases are contained in heavy, high pressurized metal containers, the large amounts of potential energy resulting from compression of the gases makes the cylinder a potential rocket or fragmentation bomb. If a neck of a pressurized cylinder should be accidentally broken off, the energy released would be sufficient to propel the cylinder to over three-quarters of a mile in height. A standard 250 cubic foot cylinder pressurized to 2,500 PSIG can become a rocket attaining a speed of over 30 miles per hour in a fraction of a second after venting from the broken cylinder connection.

IDENTIFICATION

- The contents of any compressed gas cylinder must be clearly identified. Such identification should be stenciled or stamped on the cylinder or label.
- No compressed gas cylinder should be accepted for use that does not legibly identify its contents by name. If the label on the cylinder becomes unclear the cylinder should be marked “contents unknown” and returned to the manufacturer.
- Always read label
- Never rely on the color of the cylinder for identification. Color coding is not reliable because cylinder colors may vary with the supplier.
- Do not destroy or remove identification tags or labels.
- Empty cylinders should be labeled with the word empty or the abbreviation MT.

STORAGE

- Gas cylinders MUST be properly secured at all times to prevent tipping, falling, or rolling. They should be secured around the upper third of the cylinder with straps, chains connected to a wall bracket or other fixed surface, or by the use of a cylinder stand.
- Store cylinders in a cool, dry, well-ventilated, fire-resistant area.
- Shall not be stored in exits or exit routes
- Shall be stored in an upright position
- Keep valve protective caps in place when the cylinder is not in use
- Shall be stored so that full cylinders remain separate from empty cylinders
• Shall be stored in compatible groups. Inert gases are compatible with all other gases and may be stored together.
• Keep Oxygen cylinders a minimum of twenty feet from flammable gas cylinders or combustible materials. If this can not be done, separation by a non-combustible barrier at least 5 feet high with a fire rating of 0.5 hours.

TRANSPORTING

• Always transport cylinders with valve caps or other valve protection in place and regulators removed.
• Pulling cylinders by their valve caps, rolling them on their sides, dragging or sliding them can cause damage. Rolling cylinders on their bottom edge may be acceptable for short distances.
• Transport cylinders on specially built carts or trolleys or other devices designed for this.
• All transport devices should have some way of securing cylinders to prevent them from falling.
• Do not allow cylinders to strike each other violently or handle roughly.
• Never lift cylinders with magnets, chains, or wire rope slings.

GENERAL GUIDELINES

• Ensure that the regulator pressure control valve is closed before attaching to tanks.
• Close valves on gas cylinders when a system is not in use.
• Remove all pressure form regulators not currently in used (by opening equipment valves downstream after the regulators are closed).
• Regulators are gas specific and not necessarily interchangeable! Always make sure that the regulator and valve fittings are compatible.
• Never use oil or grease on the regulator of a cylinder valve.