Compressed Gas Cylinders

**Purpose**
The purpose of this program is to ensure safe handling of compressed gas cylinders.

**Scope**
The scope of this program is to provide guidelines for handling and storage of compressed gas cylinders.

**Responsibilities**
The Person in Charge (PIC), Lead Operator, Consultant, or Production Superintendent is responsible for:

Being knowledgeable of this SWP, to ensure proper storage and handling of compressed gas cylinders according to this program.

**Requirements**

**Handling Cylinders**
- Do not move or store cylinders without properly installing the protective cap over the valve.
- Cylinders are difficult to hand carry. Use a carrier or get help.
- When moving cylinders do not drag them across the deck or grating.
- Cylinders moved by crane should be secured in a compressed cylinder rack and should not be dropped. Use of slings, ropes, or electromagnets is prohibited.
- Cylinders should not be allowed to strike each other.
- If cylinder or valve begins to show excessive exterior corrosion, it should be sent to the owner (Gas Company) to be inspected and possibly tested.

**Using Cylinders**
- Cylinders must be used in an upright position and secured from being knocked over.
- The protective cap must be in place when cylinders are being moved or not in use.
- Cylinder valves must be opened slowly.
- Compressed gas cylinders must never be taken into an unventilated room, tank, or confined space.
- Threads on a regulator or fitting must correspond to those on the cylinder valve outlet. Do not force or modify connections.
• Never use a cylinder of compressed gas without a pressure-reducing regulator connected to the cylinder valve, except where the total system is specifically designed to handle maximum cylinder pressure.

• Use regulators and pressure gauges only with gases and pressure ratings for which they are designed and intended.

• Always close the cylinder valve before attempting to stop leaks between the cylinder and regulator.

• Cylinder valves must be closed when the work is finished, the gas released from the regulator, the regulator removed, and the protective cap installed.

• Never permit sparks, molten metal, electric currents, excessive heat, or flames to contact the cylinder or attachments.

• Never use oil or grease as a lubricant on valves or attachments to oxygen cylinders.

• During everyday use the cylinder will be kept in a bottle rack or it will be properly secured with chain, bracket, or cable to a stationary source, such as an I-beam, brace etc., on the platform. This is to ensure safe operations and prevent it from dropping. Securing cylinders to the handrails is prohibited.

Storing Cylinders

• Properly secure cylinders upright with chain, bracket, or cable to prevent dropping. Bottles should be secured tightly to prevent them from falling.

• Do not store oxygen cylinders within 20 feet of combustible gas cylinders or near any other substance where a fire could result unless protected by a wall at least five feet high having a fire resistance rating of at least 30 minutes.

• Store cylinders in a safe, dry, well-ventilated area that limits corrosion damage and deterioration. Hydrotest on cylinders should be current. This paperwork should be inspected prior to use.

• Flammable or hazardous materials must not be stored in the same area as the cylinders.

• Cylinders must not be stored in areas where other work activities may damage them.

• Store empty and full cylinders separately, with empty cylinders plainly identified to avoid confusion.
Handling of compressed gas cylinders

- Cylinders must be handled with extreme care to avoid damage to the cylinders and to avoid possible back injuries.
- Protective caps must be in place except for cylinders in use which then should have a regulator on the cylinder valve.
- Oxygen and fuel gas cylinders shall not be taken into confined spaces.
- Cylinders may be rolled on their bottom edge or moved with hand trucks, but never dragged.
- Cylinders or valves must not be modified.
- Cylinders must not be used for other purposes such as “rollers”, supports, etc.
- Slings must not be used to lift/move cylinders. Bottle racks shall be used.
- Empty cylinders should be clearly marked as EMPTY.
- Never consider cylinders as completely empty or without internal pressure. Always use extreme care when handling cylinders.

Regulators used with compressed gas cylinders

- Only regulators approved by recognized testing agencies such Underwriters Laboratories, Inc. or Factory Mutual should be used at Apache sites.
- Regulators should have both high and low pressure gauges.
- Oxygen regulators should have a safety relief valve and safety vent covers on the high pressure gauge.
- Regulator treads should conform to industrial standards. (ANSI / CGA V-1-1987).
- Regulators should be clearly marked as to their type of service.
- Regulators must always be handled carefully and repaired only by the manufacturer.
- Leaky and damaged regulators or regulators showing “creeping” pressure changes must be taken out of service and repaired.
- The pressure-adjusting device should be released whenever regulators are connected but not in use.
Cylinder valves should never be opened until the regulator is drained of gas and the pressure-adjusting device is fully released.

**Hoses and hose connections used with compressed gas cylinders**

Hoses and connections must be properly identified.

Color codes for hoses should be:

- Red - fuel-gas hose.
- Green - oxygen hose.
- Black - inert gas or air hose.

Connection markings are usually as follows:

- Std-Oxy for oxygen.
- Std-Acet for acetylene.

The following safety rules apply to the use of hoses in welding and cutting activities:

- Backflow protection shall be provided by an approved device that will prevent oxygen from flowing into the fuel-gas system or fuel from flowing into the oxygen system. (Follow vendor installation instructions.)

- Flash-back protection shall be provided by an approved device that will prevent flame from passing into the fuel-gas system. (Follow vendor installation instructions.)

- Do not use hoses that are longer than necessary.

- Prevent kinking of hoses.

- Prevent hose damage from pedestrian traffic or equipment.

- Repair or replace damaged or leaking hoses at once. (Do not repair with tape.)

- Inspect hoses frequently. Test for leaks with normal pressure using a soapy water solution.

- Protect hoses from sparks, slag, grease, oil, chemicals, etc.