



## ADMINISTRATIVE PRACTICES MANUAL

### SAFETY MANUAL – COMPRESSED GASES:

#### 1.0 Scope and Application

This policy has been developed to make employees aware of the safe handling and storage of compressed gas cylinders. This policy applies to all compressed gas use and complies with Chapter SPS 332 (Public Employee Safety and Health) of the Wisconsin Administrative code as promulgated by the Wisconsin Department of Safety and Professional Services and 29 CFR Part 1910.101 (Compressed Gas General Requirements) and 1910.253 (Oxy Fuel Gas Welding and Cutting) as promulgated by the U.S. Occupational Safety and Health Administration.

#### 2.0 Responsibilities

**Risk Management:** Support and management of this policy.

**Department Heads:** Implementation of policy.

**Supervisors:** Ensure policy is adhered to by all employees.

**Employees:** Follow requirements contained in this policy.

All employees are responsible for complying with the requirements contained in this policy. Failure to abide by these requirements may subject the employee to disciplinary action, up to and including discharge.

#### 3.0 Departmental Policies and Requirements

This policy represents minimum compressed gas handling and storage requirements. Department Heads may develop more specific procedures to be followed in their respective departments.

#### 4.0 Definitions

None.

#### 5.0 Training

Employees whose job duties require the use of compressed gases will be instructed in the requirements of this policy at the time of their initial assignment and whenever this policy is revised.

#### 6.0 Documentation Requirements

None.

#### 7.0 General Requirements

- a) All compressed gas cylinders must be stored in an upright position and secured around the body of the cylinder to prevent falling. Smoking is not allowed around compressed gas cylinders.
- b) Use of hydrogen, manifold and piping systems and other compressed gases not covered in this policy shall comply with the requirements of the Compressed Gas Association.
- c) Under no condition shall acetylene be generated, piped (except in approved cylinder manifolds) or utilized at a pressure in excess of 15 psig (103 kPa gauge pressure) or 30 psia (206 kPa absolute).
- d) Only approved apparatus such as torches, regulators or pressure-reducing valves, acetylene generators, and manifolds shall be used.



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- e) Compressed gas cylinders shall be legibly marked, for the purpose of identifying the gas content, with either the chemical or the trade name of the gas. Such marking shall be by means of stenciling, stamping, or labeling, and shall not be readily removable. Whenever practical, the marking shall be located on the shoulder of the cylinder.
- f) All cylinders with a water weight capacity of over 30 pounds (13.6 kg) shall be equipped with means of connecting a valve protection cap or with a collar or recess to protect the valve.
- g) Cylinders shall be kept away from radiators and other sources of heat.
- h) Inside of buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location, at least 20 (6.1 m) feet from combustible materials. Cylinders should be stored in definitely assigned places away from elevators, stairs, or gangways. Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects, or subject to tampering by unauthorized persons. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.
- i) Empty cylinders shall have their valves closed.
- j) Valve protection caps, where cylinder is designed to accept a cap, must always be in place, hand-tight, except when cylinders are in use or connected for use.
- k) Inside a building, cylinders, except those in actual use or attached ready for use, shall be limited to a total gas capacity of 2,000 cubic feet (56 m<sup>3</sup>) or 300 pounds (135.9 kg) of liquefied petroleum gas.
- l) Acetylene cylinders shall be stored valve end up.

### 8.0 Oxygen Storage

- a) Oxygen cylinders shall not be stored near highly combustible material, especially oil and grease; or near reserve stocks of carbide and acetylene or other fuel-gas cylinders, or near any other substance likely to cause or accelerate fire; or in an acetylene generator compartment.
- b) Oxygen cylinders stored in outside generator houses shall be separated from the generator or carbide storage rooms by a noncombustible partition having a fire-resistance rating of at least 1 hour. This partition shall be without openings and shall be gastight.
- c) Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet (6.1 m) or by a noncombustible barrier at least 5 feet (1.5 m) high having a fire-resistance rating of at least one-half hour.

### 9.0 Operating Procedures

- a) Cylinders, cylinder valves, couplings, regulators, hose, and apparatus shall be kept free from oily or greasy substances. Oxygen cylinders or apparatus shall not be handled with oily hands or gloves. A jet of oxygen must never be permitted to strike an oily surface, greasy clothes, or enter a fuel oil or other storage tank.
- b) When transporting cylinders by a crane or derrick, a cradle, boat, or suitable platform shall be used. Slings or electric magnets shall not be used for this purpose. Valve-protection caps, where cylinder is designed to accept a cap, shall always be in place.
- c) Cylinders shall not be dropped or struck or permitted to strike each other violently.
- d) Valve-protection caps shall not be used for lifting cylinders from one vertical position to another. Bars shall not be used under valves or valve-protection caps to pry cylinders loose when frozen to the ground or otherwise fixed; the use of warm (not boiling) water is recommended. Valve-protection caps are designed to protect cylinder valves from damage.
- e) Unless cylinders are secured on a special truck, regulators shall be removed and valve-protection caps, when provided for, shall be put in place before cylinders are moved.



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- f) Cylinders not having fixed hand wheels shall have keys, handles, or nonadjustable wrenches on valve stems while these cylinders are in service. In multiple cylinder installations only one key or handle is required for each manifold.
- g) Cylinder valves shall be closed before moving cylinders.
- h) Cylinder valves shall be closed when work is finished.
- i) Valves of empty cylinders shall be closed.
- j) Cylinders shall be kept far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not reach them, or fire-resistant shields shall be provided.
- k) Cylinders shall not be placed where they might become part of an electric circuit. Contacts with third rails, trolley wires, etc., shall be avoided. Cylinders shall be kept away from radiators, piping systems, layout tables, etc., that may be used for grounding electric circuits such as for arc welding machines. Any practice such as the tapping of an electrode against a cylinder to strike an arc shall be prohibited.
- l) Cylinders shall never be used as rollers or supports, whether full or empty.
- m) The numbers and markings stamped into cylinders shall not be tampered with.
- n) No person, other than the gas supplier, shall attempt to mix gases in a cylinder. No one, except the owner of the cylinder or person authorized by him, shall refill a cylinder.
- o) No one shall tamper with safety devices in cylinders or valves.
- p) Cylinders shall not be dropped or otherwise roughly handled.
- q) Unless connected to a manifold, oxygen from a cylinder shall not be used without first attaching an oxygen regulator to the cylinder valve. Before connecting the regulator to the cylinder valve, the valve shall be opened slightly for an instant and then closed. Always stand to one side of the outlet when opening the cylinder valve.
- r) A hammer or wrench shall not be used to open cylinder valves. If valves cannot be opened by hand, the supplier shall be notified.
- s) Cylinder valves shall not be tampered with nor should any attempt be made to repair them. If trouble is experienced, the supplier should be sent a report promptly indicating the character of the trouble and the cylinder's serial number. Supplier's instructions as to its disposition shall be followed.
- t) Complete removal of the stem from a diaphragm-type cylinder valve shall be avoided.
- u) Fuel-gas cylinders shall be placed with valve end up whenever they are in use.
- v) Liquefied gases shall be stored and shipped with the valve end up.
- w) Cylinders shall be handled carefully. Rough handling, knocks, or falls are liable to damage the cylinder, valve or safety devices and cause leakage which may result in an explosion or result in the cylinder becoming a powerful projectile that is fueled by the escaping gas from a damaged valve that may have been broken off.
- x) Before connecting a regulator to a cylinder valve, the valve shall be opened slightly and closed immediately. The valve shall be opened while standing to one side of the outlet; never in front of it. Never crack a fuel-gas cylinder valve near other welding work or near sparks, flame, or other possible sources of ignition.
- y) Before a regulator is removed from a cylinder valve, the cylinder valve shall be closed and the gas released from the regulator.
- z) Nothing shall be placed on top of an acetylene cylinder when in use which may damage the safety device or interfere with the quick closing of the valve.
- aa) If cylinders are found to have leaky valves or fittings which cannot be stopped by closing of the valve, the cylinders shall be taken outdoors away from sources of ignition and slowly emptied.
- bb) A warning should be placed near cylinders having leaking fuse plugs or other leaking safety devices not to approach them with a lighted cigarette or other source of ignition. Such cylinders should be plainly tagged; the supplier should be promptly notified and his instructions followed as to their return.
- cc) Safety devices shall not be tampered with.



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- dd) Fuel-gas shall never be used from cylinders through torches or other devices equipped with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.
- ee) The cylinder valve shall always be opened slowly.
- ff) An acetylene cylinder valve shall not be opened more than one and one-half turns of the spindle, and preferably no more than three-fourths of a turn.
- gg) Where a special wrench is required it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel-gas flow can be quickly turned off in case of emergency. In the case of manifolded or coupled cylinders at least one such wrench shall always be available for immediate use.

**End Policy**