

Sample Lesson Plan
Construction Industry Training Program
Welding and Cutting

Instructor's Activities

- PowerPoint presentation
- Discuss 29 CFR 1926 Subpart J
- Participant feedback

Learning Objectives and Outcomes

I. Transporting, Moving, and Storing Compressed Gas Cylinders

- A. Valve protection caps shall be in place and secured.
- B. Cylinders shall be moved by tilting and rolling them on their bottom edges.
- C. When cylinders are transported by powered vehicles, they shall be secured in a vertical position
- D. Valve protection caps shall not be used for lifting cylinders from one vertical position to another.
- E. Regulators shall be removed and valve protection caps put in place before cylinders are moved
- F. A suitable cylinder truck, chain, or other steadying device shall be used to keep cylinders from being knocked over while in use.
- G. 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.

II. Placing Cylinders

- A. 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.
- C. Cylinders shall be placed where they cannot become part of an electrical circuit.
- D. Electrodes shall not be struck against a cylinder to strike an arc.
- E. Fuel gas cylinders shall be placed with valve end up whenever they are in use.
- F. Cylinders containing oxygen or acetylene or other fuel gas shall not be taken into
- G. confined spaces.

III. Treatment of Cylinders

- A. Cylinders, whether full or empty, shall not be used as rollers or supports.
- B. No person other than the gas supplier shall attempt to mix gases in a cylinder.
- C. No one except the owner of the cylinder or person authorized by him, shall refill a cylinder.
- D. No one shall use a cylinder's contents for purposes than those intended
- E. by the supplier.
- F. All cylinders used shall meet the Department of Transportation
- G. requirements published in 49 CFR Part 178, Subpart C, Specification for
- H. Cylinders.
- I. No damaged or defective cylinder shall be used.

IV. Use of Fuel Gas

- A. Fuel gas shall not be used from cylinders through torches or other devices which are equipped with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.
- B. Before a regulator to a cylinder valve is connected, the valve shall be opened slightly and closed immediately. (This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator.)

- C. The cylinder valve shall always be opened slowly to prevent damage to the regulator. For quick closing, valves of fuel gas cylinders shall not be opened more than 1½ turns.
- D. Before a regulator is removed from a cylinder valve, the cylinder valve shall always be closed and the gas released from the regulator.
- E. If a leak should develop at a fuse plug or other safety device, the cylinder shall be removed from the work area.

V. Fuel Gas and Oxygen Manifold

- A. Fuel gas and oxygen manifolds shall bear the name of the substance they contain in letters at least 1-inch high
- B. Manifold hose connections, including both ends of the supply hose that lead to the manifold, shall be such that the hose cannot be interchanged between fuel gas and oxygen manifolds and supply header connections.
- C. Adapters shall not be used to permit the interchange of hose.
- D. Hose connections shall be kept free of grease and oil.
- E. When not in use, manifold and header hose connections shall be capped.

VI. Hose

- A. Fuel gas and oxygen hose shall be easily distinguishable from each other.
- B. When parallel sections of oxygen and fuel gas hose are taped together, not more than 4 inches out of 12 inches shall be covered by tape.
- C. All hose in use, carrying acetylene, oxygen, natural or manufactured fuel gas, or any gas or substance which may ignite or enter into combustion, or be in any way harmful to employees, shall be inspected at the beginning of each working shift.
- D. Hose which has been subject to flashback, or which shows evidence of severe wear or damage, shall be tested to twice the normal pressure to which it is subject, but in no case less than 300 p.s.i.
- E. Defective hose, or hose in doubtful condition, shall not be used.

VII. Torches

- A. Clogged torch tip openings shall be cleaned with suitable cleaning wires, drills, or other devices designed for such purpose.
- B. Torches in use shall be inspected at the beginning of each working shift for leaking shutoff valves, hose couplings, and tip connections.
- C. Defective torches shall not be used.
- D. Torches shall be lighted by friction lighters or other approved devices, and not by matches or from hot work.

References

OSHA Standard

29 CFR Part 1926 Subpart J – Welding and Cutting

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10696

Reference Material

<http://www.osha.gov/doc/outreachtraining/htmlfiles/welding.html>

American National Standards Institute, Z49.1-1967, Safety in Welding and Cutting,

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