STATE OF CALIFORNIA EDMUND G. BROWN JR., *Governor*

DEPARTMENT OF INDUSTRIAL RELATIONS
DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
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Juliann Sum, Chief

December 9, 2014

J. Robert Harrell, President
Safety Management Services
4012 Santa Nella Place
San Diego, CA 92130-2291

Re: Title 8 Sections 1740 and 4650 Transporting Compressed Gas Cylinders by Vehicles

Dear Mr. Harrell;

This letter is provided in response to your inquiry to the Division of Occupational Safety and Health (Cal/OSHA) on October 31, 2014 regarding transporting oxygen and acetylene cylinders on service trucks.

In your inquiry you asked the following:

1. Can an aftermarket cap, like the Snap-On Low Pressure cap, be used on acetylene cylinders (approximate pressure of about 240 pounds per square inch gauge)? Or should the cylinder manufacturer's valve cover be used?

2. Can an aftermarket cap, like the Snap-On Low Pressure cap, be used on oxygen cylinders that have internal pressure, when filled, of approximately 2,200 psig?

3. Can the gauges be left on the cylinders during transportation if an aftermarket cap, like the Snap-On Low Pressure cap, is used to cover the valve stems/handles on the cylinders?

4. Is there a specific Cal OSHA code or other code that Cal OSHA would rely on that prohibits the use of aftermarket valve covers, like the Snap-On Low Pressure cap? If the answer is yes, which code or codes would apply?

5. Could a company, contractor, municipality or other business entity be issued a violation for any of the conditions detailed in questions 1, 2 or 3? If the answer is yes, which code(s) and would there be a monetary fine involved?

The applicable regulations related to the valve protection on compressed gas cylinders are located in California Code of Regulations, Title 8, General Industry Safety Orders, sections 4650(f) and (g) and Construction Safety Orders, section 1740(c) with the following requirements:

> General Industry Safety Orders section 4650. Storage, Handling, and Use of Cylinders.

(f) All cylinders which are designed to accept valve protection devices shall be equipped with such devices when the cylinders are not in use or connected for use.

(g) Unless cylinders are secured on a special truck or rack, regulators shall be removed and valve-protection devices, when provided for, shall be put in place before cylinders are moved.

Construction Safety Orders section 1740. Storage and Use of Cylinders.

(c) Gas cylinders in portable service shall be conveyed by suitable hand trucks to which they are securely fastened, or safely carried where job conditions require. All gas cylinders in service shall be securely held in substantial fixed or portable racks, or placed so they will not fall or be knocked over. Valve protection caps, when provided for, shall be put in place before cylinders are moved, transported or stored.

These regulations apply to compressed gas cylinders which are moved, stored and transported in hand trucks or racks at industrial work sites or at construction job sites. California Code of Regulations, Title 8, section 4649(a) states:

All portable cylinders used for the storage and shipment of compressed gases shall be constructed and maintained in accordance with the regulations of the U. S. Department of Transportation 49 CFR Parts 171-179.

49 CFR 173.301(h) requires the valve of compressed gas cylinder to be protected from damages during transportation and it states various methods which could be used to protect the cylinder valve:

Section 173.301 General requirements for shipment of compressed gases and other hazardous materials in cylinders, UN pressure receptacles and spherical pressure vessels.

(h) *Cylinder valve protection.* UN pressure receptacles must meet the valve protection requirements in § 173.301b(c). A DOT specification cylinder used to transport a hazardous material must meet the requirements specified in this paragraph (h).

(1) The following specification cylinders are not subject to the cylinder valve protection requirements in this paragraph (h):

(i) A cylinder containing only a Division 2.2 material without a Division 5.1 subsidiary hazard;

(ii) A cylinder containing a Class 8 liquid corrosive only to metal;

(iii) A cylinder with a water capacity of 4.8 liters (293 in ^{3}) or less containing oxygen, compressed;

(iv) A cylinder containing oxygen, refrigerated liquid (cryogenic liquid);

(v) A Medical E cylinder with a water capacity of 4.9 liters (300 in ^{3}) or less;

(vi) A fire extinguisher; or

(vii) A "B" style cylinder with a capacity of 40 ft ^{3} (1.13 m^3) or an "MC" style cylinder with a capacity of 10 ft ^{3} (0.28m^3) containing acetylene.

(2) For cylinders manufactured before October 1, 2007, a cylinder must have its valves protected by one of the following methods:

(i) By equipping the cylinder with securely attached metal caps of sufficient strength to protect valves from damage during transportation;

(ii) By boxing or crating the cylinders so as to protect valves from damage during transportation;

(iii) By constructing the cylinder so that the valve is recessed into the cylinder or otherwise protected to the extent that it will not be subjected to a blow when the container is dropped onto a flat surface; or

(iv) By loading the cylinders in an upright position and securely bracing the cylinders in rail cars or motor vehicles, when loaded by the consignor and unloaded by the consignee.

(3) For cylinders manufactured on or after October 1, 2007, each cylinder valve assembly must be of sufficient strength or protected such that no leakage occurs when a cylinder with the valve installed is dropped 1.8 m (6 ft.) or more onto a non-yielding surface, such as concrete or steel, impacting the valve assembly or protection device at an orientation most likely to cause damage. The cylinder valve assembly protection may be provided by any method meeting the performance requirement in this paragraph (h)(3). Examples include:

(i) Equipping the cylinder with a securely attached metal cap.

(ii) Packaging the cylinder in a box, crate, or other strong outer packaging conforming to the requirements of § 173.25.

(iii) Constructing the cylinder such that the valve is recessed into the cylinder or otherwise protected.

A valve protection device must be designed and manufactured to protect a cylinder valve from being struck or damaged from the cylinder falling or an object striking the cylinder. Use of a valve protection cap is one of the methods to protect the cylinder valve from damage during transportation and storage.

In response to questions 1, 2 and 4: Cal/OSHA does not prohibit the use of aftermarket valve protection caps. However they must be designed constructed and maintained in accordance with the regulations of the U. S. Department of Transportation 49 CFR Parts 171-179 as stated in Title 8 section 4649(a).

In response to question 3: A regulator may be left on a cylinder during a move if it is secured on a special truck or rack which ensures that the regulator is protected. The regulator must be removed and a valve protection device, when provided for, must be put in place if the cylinder is not secured on a special truck or rack during the move. An aftermarket valve cover which is used with the regulator left in place would not be allowed pursuant to Title 8 sections 1740 and 4650 if the cylinder is not secured on a special truck or rack. The aftermarket valve cover would be

allowed if the regulator was removed and the valve cover met the requirements of 49 CFR 173.301(h).

In response to question 5: An employer will be in violation of Title 8 section 4649 and citations with monetary penalty will be issued if a valve protection cap in use fails to provide sufficient protection for a cylinder valve. The employer will also be cited for violations of section 1740 or 4650 if a regulator is left on a cylinder while it is being moved or stored without being secured on a special truck or rack, even if the regulator is covered by an aftermarket valve cap.

We hope this provides you with information you need. If you have any further questions regarding this or related safety concerns, please contact me at 510-286-7010.

Sincerely,

E Berg

Eric Berg
Acting Principal Safety Engineer