



U.S. Department
of Transportation
**Research and
Special Programs
Administration**

Memorandum

Date **MAY 21 2002**

Reply to Attn of:

Subject **INFORMATION:: Response to Request for Review**

From **Delmer F. Billings, Chief
Standards Development, OHMS**

To **Mike Marshall
Occupational Safety and Health Administration
Office of General Industry Compliance Assistance**

This is in reference to your facsimile dated February 7, 2002 and our telephone conversation, concerning the storage of Compressed Natural Gas (CNG) in DOT 3AA cylinders. Specifically, you asked if a cylinder made in conformance with a specification listed in the table in § 173.34(e)(13) and used exclusively in CNG service, instead of a periodic hydrostatic retest, be given a complete external visual inspection at the time periodic retest becomes due. In addition, you requested our office to review your draft of interpretation.

We suggest that the following language and/or corrections be used in your response:

Reply to Question number 1:

The Department of Labor's Occupational Safety and Health Administration (OSHA) workplace health and safety requirements apply to the storage of CNG in DOT 3 AA specification cylinders. In addition, your cylinders must conform to DOT regulatory requirements applicable to the maintenance and requalification of DOT 3AA cylinders. The Hazardous Materials Regulations (HMR; 49 CFR Parts 171 - 180) apply to the transportation of hazardous materials in commerce, including packaging authorized for such transportation. Packaging manufactured in accordance with HMR requirements must be marked to indicate conformance with the specific requirements applicable to the packaging. The OSHA regulations incorporate the HMR by reference; thus, the OSHA standards also require DOT specification 3AA cylinders used for storage to be maintained and requalified in accordance with the HMR requirements. Further, cylinders used to transport hazardous materials in commerce are subject to HMR and may not be offered or transported unless they are maintained and requalified in accordance with the HMR.

OSHA/DOT Requirements

As your facsimile notes, the visual inspection requirements in §173.34(e)(10) of the HMR are for cylinders used exclusively for materials specifically listed. However, the provision allowing performance of a visual inspection instead of a hydrostatic test applies only to cylinders used exclusively for the materials specifically listed in the table is contained in §173.34(e)(13). The material, CNG you identified is not listed in the table. Therefore, cylinders used exclusively for CNG service does not qualify for the five-year complete external visual inspection in §173.34(e)(13). Thus, the hydrostatic test as specified in the §173.34(e) table must be used.

With regard to your reference to the Compressed Gas Association (CGA) pamphlets, C-6 and C-8, Section 173.34(e)(3) of the HMR prescribes that a DOT specification cylinder must be visually inspected, internally and externally, in accordance with CGA Pamphlets C-6, C6.1, C 6.2, as applicable. CGA pamphlet C-8 applies to requalification of 3HT specification cylinders thus would not be applicable to DOT 3AA specification cylinders, as noted in your letter. In addition, the CGA pamphlets are specifically listed in the §171.7 table which sets forth materials (e.g. CGA pamphlets) incorporated by reference into the HMR. Therefore, as prescribed under 173.34(e)(2)(v)(C), the pamphlet maintained must be the edition incorporated by reference in §171.7.

I hope this information is helpful. If you have further questions, please do not hesitate to contact this office

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FAX MESSAGE
OCCUPATIONAL SAFETY and HEALTH ADMINISTRATION
OFFICE of GENERAL INDUSTRY COMPLIANCE ASSISTANCE
200 CONSTITUTION AVENUE, N.W., N-3107
WASHINGTON, D.C. 20210
PHONE: (202) 693-1850
FAX: (202) 693-1628

*My CNG
 cylinder
 inspection*

DATE: 2-27-2

Please deliver the following document to:

NAME: Sandra Webb

OFFICE: DOT - RSPA

PHONE: ~~366-3012~~

FAX: 366-3012

Total number of pages (including this page): 5

FROM: Mike Marshall

PHONE: OSHA

Comments: Sandra: Per your voicemail. Here is my draft again. Please take a look at my interpretation of your rules. Let me know if these CNG cylinders are required to be hydro'd AND have visual internal/external inspections. Also whether I'm off base on any other issues.

Thanks

PLEASE CALL IMMEDIATELY IF THIS FAX IS INCOMPLETE OR ILLEGIBLE.

Mike

Original Draft -CNG Fueling Station 1910.101 D-113-1

MLM -January 25, 2002

Initials								
Date								
Last Name	Marshall	Wilkins	Probert	Buchanan	Fairfax	Slattery	Vassalo	Sothiem
Office Symbol	GICA	GICA	DCP	GICA	DCP	DSSP	SOL	DCP

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cc:FAIRFAX\GALASSI\BUCHANAN\MARSHALL\ALL SAA\SIEGFRIED\ WILKENS\S STANDARDS\SOL
(Vassalo)\Elveston (HSAO)\ALL RAs\OTI (Howicz)\HRTEPA-CEPPO (C. Mathiessen)\CHRONSUBJECTDO
Submit to OCIS & DCP Homepage

SEE WHITE COPY for SUPPORTING REFERENCES

DCP/GICA/MLM/D-113

Mr. Hank Seiff, P.E.
Director of Technology
The Natural Gas Vehicle Coalition
400 North Capitol Street, NW
Washington, DC 20001

Dear Mr. Seiff::

Thank you for your November 9, 2001-letter to the Occupational Safety and Health Administration's (OSHA's) Directorate of Compliance Programs (DCP). You have questions regarding OSHA's *Compressed Gasses (General Requirements)* Standard, §1910.101. Please be aware that this response may not be applicable to any question or situation not delineated within your original correspondence. Your specific questions are related to inspection and maintenance requirements for compressed natural gas (CNG) cylinders at vehicular fueling stations and the application of a latter version of a document which is incorporated by reference into OSHA standards.

Scenario: U.S. Department of Transportation (DOT) 3AA cylinders are used for storage of high pressure gas at some CNG vehicular refueling stations.

Question #1: Does OSHA have any requirements or guidelines for station operators on the inspection and maintenance of these fuel storage cylinders?

Reply: First, OSHA would have jurisdiction over the situation you describe. The DOT 3AA cylinders are not involved in the movement of materials involved with interstate commerce, rather, the cylinders are used merely for on-site storage of CNG. Therefore, DOT has no authority to enforce its regulations over the storage of CNG in cylinders at the described locations.

*Copy of
by [Signature]*

Handwritten notes:
- 1st 2nd 3rd 4th 5th 6th 7th 8th 9th 10th 11th 12th
pipeline not free

Consequently, there is no pre-emption of OSHA authority and OSHA would enforce its workplace health and safety regulations over the situation you describe.

OSHA/DOT Requirements

While OSHA has not published any guidelines on the situation you describe, we do have regulations related to the inspection and maintenance of compressed gas cylinders, which include CNG cylinders. OSHA has incorporated by reference DOT Hazardous Materials Regulations, 49 CFR Parts 171-179 (amended January 1, 1970). Part of OSHA regulation §1910.101(a)¹ requires station operators/employers to determine that compressed gas cylinders under their control are in a safe condition to the extent that the cylinders' mechanical integrity can be determined by visual inspection. OSHA and DOT recognize that based on the service of the cylinder, i.e., material, pressure, etc. a visual inspection alone may be insufficient to determine the mechanical integrity of a compressed gas cylinder. Therefore, an employer may not be able to adequately determine the condition of their cylinder(s) based merely on a visual inspection. Therefore, OSHA and DOT require visual and other inspections as prescribed in the referenced DOT regulations. DOT has a regulation, 49 CFR 173.34, *Qualification, Maintenance and Use of Cylinders* (a copy of this section of the 1970 incorporated standard is attached), which is applicable to your question. In particular, 49 CFR §173.34(e), *Periodic retesting and reinspection of cylinders*, requires periodic retesting of DOT 3AA cylinders every 5 years. This requirement would be applicable to DOT 3AA cylinders containing CNG. Further, 49 CFR §173.34(e)(1)² specifies criteria to be included in a periodic retest and also requires a visual internal and external examination.

As stated in the previous paragraph, in addition to hydrostatic retesting, 49 CFR §173.34(e)(1) requires a visual internal and external examination of DOT cylinders. While the particular DOT 1970 standard does not specify the criteria for the internal and external examinations, the current DOT standard, 49 CFR 173.34(e)(3)³, *Visual Inspection*, (see the website http://63.141.231.97/cgi-bin/om_isapi.dll?infobase=netdot&softpage=Doc_Frame_Pg42 for the current version of this regulation) does specify criteria for these inspections. Based on the 1970 DOT incorporated standard requirement to conduct internal and external visual inspections,

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- 1 29 CFR 1910.101(a) *Inspection of compressed gas cylinders. Each employer shall determine that compressed gas cylinders under his control are in a safe condition to the extent that this can be determined by visual inspection. Visual and other inspections shall be conducted as prescribed in the Hazardous Materials Regulations of the Department of Transportation (49 CFR parts 171-179 and 14 CFR part 103). Where those regulations are not applicable, visual and other inspections shall be conducted in accordance with Compressed Gas Association Pamphlets C-6-1968 and C-8-1962, which is incorporated by reference as specified in Sec. 1910.6.*
 - 2 49 CFR 173.34(e)(1) *This periodic retest must include a visual internal and external examination together with a test by interior hydrostatic pressure in a water jacket or other apparatus of suitable form for the determination of the expansion of the cylinder....*
 - 3 49 CFR 173.34(e)(3) *Visual Inspection. Except as otherwise provided in this section, each time a cylinder is retested, it must be visually inspected, internally and externally, in accordance with CGA Pamphlets C-6, C-6.1, C-6.2, or C-6.3, as applicable. The cylinder must be approved, rejected or condemned according to the criteria in the applicable CGA pamphlet...*

OSHA requires employers in this case to conduct these inspections as prescribed by established inspection criteria required by the current DOT standard 49 CFR 173.34(e)(3).

The OSHA incorporated standard, 49 CFR §173.34(e)(10) is not applicable to CNG cylinders in this case because your CNG cylinders do not meet the listed service criteria ("*...listed in the table below and used exclusively in the service [emphasis added] Indicated...*"). This table only lists the *used exclusively for services of liquified petroleum gas, anhydrous ammonia, fluorinated hydrocarbons, butadiene, and liquified hydrocarbon gas - CNG is not one of these specified service materials.*

Process Safety Management (PSM) Requirements

OSHA has another standard which may apply to the the inspection and maintenance of the subject cylinders. OSHA's PSM standard, 29 CFR 1910.119 would apply to the situation you describe - the storage and handling of flammable gases (e.g. CNG) when an amount of flammable gas exist in a process equal to or greater than 10,000 pounds [threshold quantity (TQ) for flammable gas]. Note, the definition of *process* includes the activities of storage and handling. Also, to determine the amount of flammable gas in the process, the amount of flammable gas in all interconnected (manifolded) cylinders is aggregated to determine if it is equal to or exceeds the TQ. When cylinders are not interconnected but are in close proximity/co-located, their amounts are aggregated if it is determined by the employer that an event such as a fire or explosion could cause the release of the contents of the non-interconnected cylinders.

When a PSM-covered process does exist and none of the exemptions apply (i.e. hydrocarbon fuels exemption, 29 CFR 1910.119(a)(1)(ii)(A), retail facilities exemption 29 CFR 1910.119(a)(2)(i), etc.), OSHA's PSM standard, 29 CFR 1910.119(j), *Mechanical Integrity*, specifically applies to the inspection, testing and maintenance of these cylinders. This particular standard among other requirements, requires employers to conduct inspections and testing on PSM-covered equipment per *recognized and generally accepted good engineering practices (RAGAGEP) - 1910.119(j)(4)(ii)*⁴. PSM is a performance oriented standard and therefore, OSHA does not specify the RAGAGEP employers utilize for their workplace application. PSM is a safety management standard. The standard requires employers to specify which codes and standards they employ (1910.119(d)(3)(i)(F), including RAGAGEP applications for PSM-covered inspections, testing, and maintenance. After the employer specifies which standard they utilize for the inspection of their cylinders, they are required to implement the provisions of the RAGAGEP. With respect to compressed gas cylinder inspection and testing, OSHA PSM does not specify or benchmark the DOT Hazardous Materials Regulations as the only RAGAGEP. Based on input from stakeholders, OSHA stated in the PSM final rule (see F.R., Volume 57, No. 36, pg 6390) that it did not intend to incorporate by reference into PSM all the codes and standards published by consensus groups. Therefore, in evaluating whether an employer's engineering practices with respect to compressed gas cylinder inspection and testing complies with PSM, OSHA would consider among other factors, whether the employer meets the requirements of the current DOT 49 CFR 173.34, *Qualification, Maintenance and Use of Cylinders* regulations.

⁴ 1910.119(j)(4)(ii) *Inspection and testing procedures shall follow recognized and generally accepted good engineering practices.*

The PSM standard is a performance-oriented standard. When not specified, the employer has flexibility in complying with the requirements of PSM, including recognized and generally accepted good engineering practices.

The previous discussion has focused on employer requirements under PSM for the inspection, testing and maintenance of DOT cylinders. Please note, when these cylinders are in a PSM-covered process, the employer must comply with all elements of PSM.

Question #2: What is OSHA's position on whether an employer may follow latter versions of the Compressed Gas Associations (CGA) pamphlets?

Response: The last sentence in 29 CFR 1910.101(a) specifies that visual and other inspections shall be conducted in accordance with CGA Pamphlets C-6-1968 and C-8-1968. However, the opening statement in this same sentence states, "Where those regulations are not applicable....". In your case, DOT regulations are applicable, therefore, this third sentence in 1910.101(a) is not applicable to you. As noted in the Response to the above question, CGA pamphlets are specified in DOT's current regulation 49 CFR 134(e)(3) for the visual inspection of cylinders. In this case, OSHA would require compliance with the current DOT regulation which specifies latter versions of the CGA pamphlets for establishing inspection criteria for the visual inspection of compressed gas cylinders.

Thank you for your interest in occupational safety and health. We hope you find this information helpful. Please be aware that the enforcement guidance contained in this response represents the views of OSHA at the time the letter was written based on the facts of an individual case, question, or scenario and is subject to periodic review and clarification, amplification, or correction. It could also be affected by subsequent rulemaking; past interpretations may no longer be applicable. In the future, should you wish to verify that the guidance provided herein remains current, you may consult OSHA's website at <http://www.osha.gov>. If you have any further questions, please feel free to contact the Office of General Industry Compliance Assistance at (202) 693-1850.

Sincerely,

Richard E. Fairfax, Director
Directorate of Compliance Programs Assistance

Supporting References:

OSHA Standards

1. 1910.101(a)